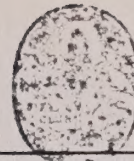


2007 0258

IGSL

DRAFT



SIERRA CLUB
SAN FRANCISCO SAN FRANCISCO
6014 COLLEGE AVENUE
OAKLAND, CA 94618

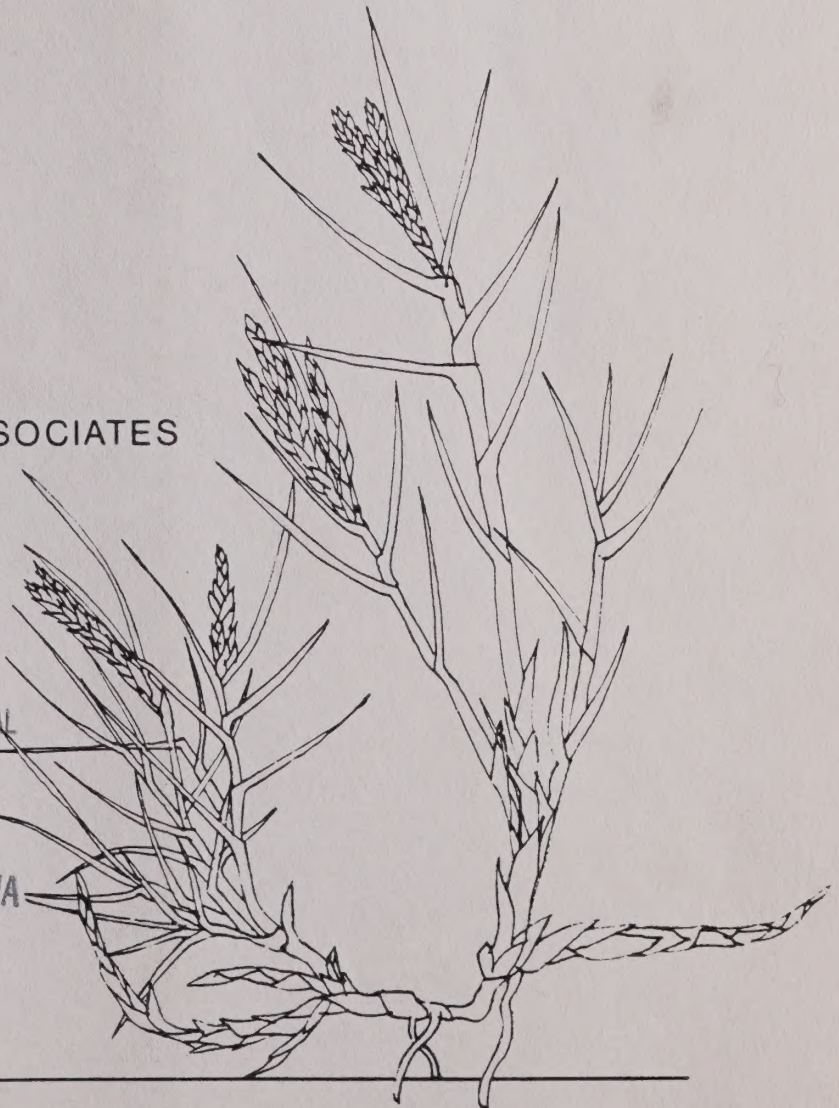
GENERAL PLAN AMENDMENT FOR 511 AREA UNION CITY, CALIFORNIA

SEDWAY COOKE ASSOCIATES
AND
ASSOCIATED
CONSULTANTS

INSTITUTE OF GOVERNMENTAL
STUDIES LIBRARY

AUG 21 2007

UNIVERSITY OF CALIFORNIA



ROGER CRAWFORD



TABLE OF CONTENTS

Page

I. BACKGROUND

A. Site Description	ii
B. Current General Plan	iii

DRAFT II. PLAN AMENDMENT

A. Land Use Element Amendments	iv
B. Circulation Element Amendments	v
C. Housing Element Amendments	vi
D. General Plan Amendments	vii

GENERAL PLAN AMENDMENT FOR THE 511 AREA

LIST OF FIGURES

Fig. 1. Location Map	ix
Fig. 2. Study Area	x
Fig. 3. Existing Land Use	xi
Fig. 4. Existing General Plan	xii

Prepared for:

COMMUNITY DEVELOPMENT DEPARTMENT
CITY OF UNION CITY, CALIFORNIA

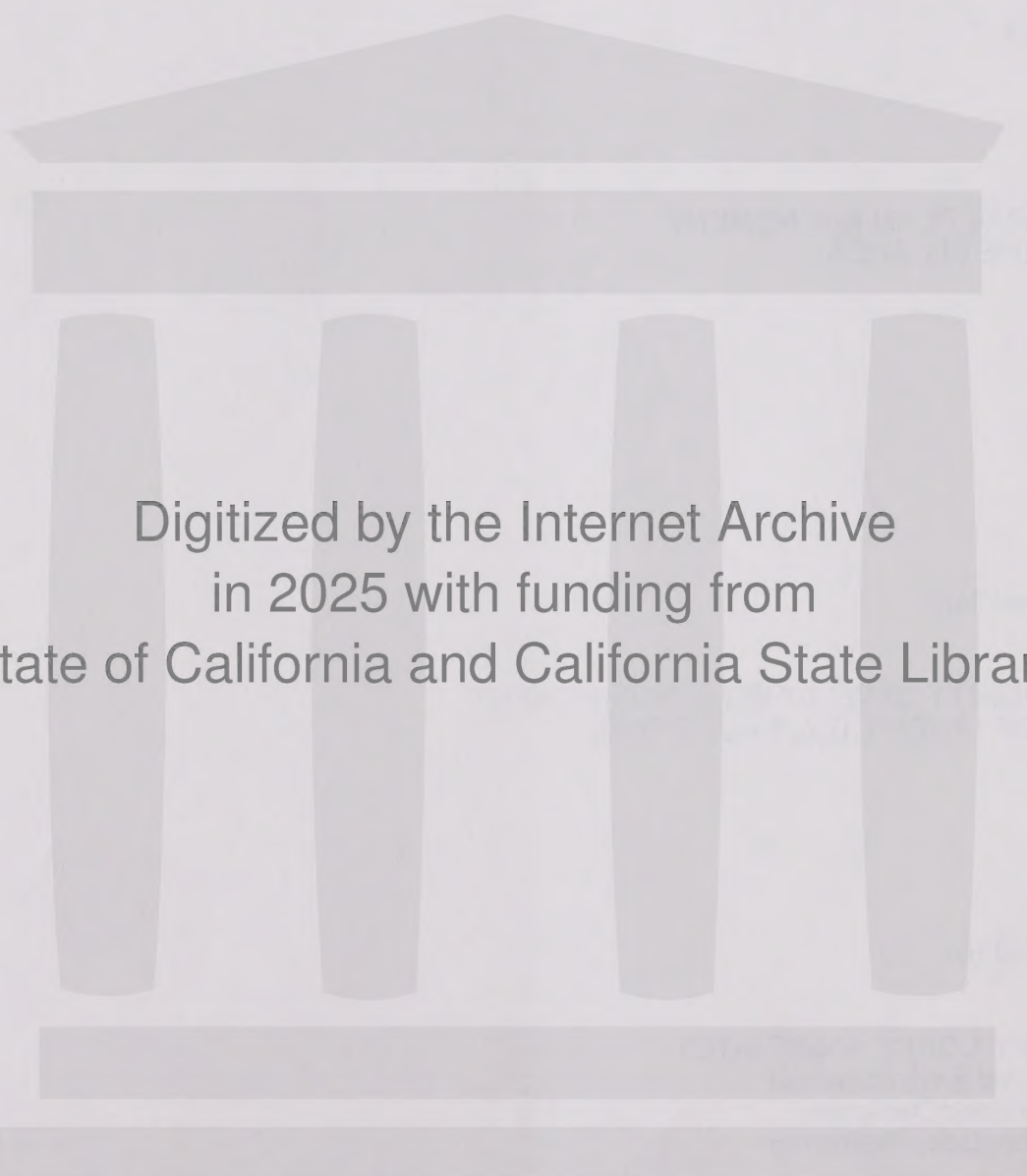
APPENDIX A. PLANT AND ANIMAL COMMUNITIES OF THE 511 AREA

Prepared by:

SEDWAY COOKE ASSOCIATES
Urban and Environmental
Planners and Designers
San Francisco, California

August 1986





Digitized by the Internet Archive
in 2025 with funding from
State of California and California State Library



<https://archive.org/details/C101696410>

TABLE OF CONTENTS

	<u>Page</u>
I. BACKGROUND	
A. Site Description.....	I-1
B. Current General Plan	I-5
II. GENERAL PLAN AMENDMENT	
A. Land Use Element Amendments	II-1
B. Circulation Element Amendments	II-7
C. Noise Element Amendments	II-9
D. Housing Element Amendments	II-9
E. Open Space Element Amendments	II-13

LIST OF FIGURES

I-1	Location Map	I-2
I-2	Study Area	I-3
I-3	Existing Land Uses	I-4
I-4	Existing General Plan	I-6
II-1	Land Use Policy Diagram.....	II-2
II-2	Circulation Policy Diagram.....	II-8
II-3	Street Classification.....	II-10
II-4	1995 Noise Contours.....	II-11
II-5	Environmental Management Policy Diagram	II-15

APPENDIX A: PLANT AND ANIMAL COMMUNITIES OF THE 511 AREA

Figure 1:	Plant Communities of the 511 Area.....	A-6
Figure 2:	Wildlife Resources	A-10
Table 1:	Wetland Indicator Status Categories Used by National Wetlands Inventory	A-4
Table 2:	Summary of Water Bird Census Data at Three Sites in the 511 Area During 1983-1984	A-12
Table 3:	Threatened and Endangered Species.....	A-15
Table 4:	Results of Wesco Live-Trapping Studies Conducted in the 511 Area, Union City, California, June 1986	A-17

I. BACKGROUND

A. SITE DESCRIPTION

Location

The 511 Area is a 906-acre site located on the west side of Union City, between State Highways 92 and 84 (see Figure I-1). Except for a 12-acre portion, the study area lies immediately west of Union City Boulevard. Benson Road and Marsten Avenue form the area's northern boundary, and Alameda Creek forms its southern boundary (see Figure I-2). To the west, the study area is bounded by the City of Hayward's Shoreline Planning Area, consisting primarily of salt evaporation ponds. Approximately 310 acres are located in the City of Fremont; however, this land is within Union City's sphere of influence. Another 3.6 acres comprise an isolated strip of land within the Hayward city limits which is also within Union City's sphere of influence. This land and the land currently within the City of Fremont have been included in the 511 Area since it is assumed they will both eventually be annexed to Union City.

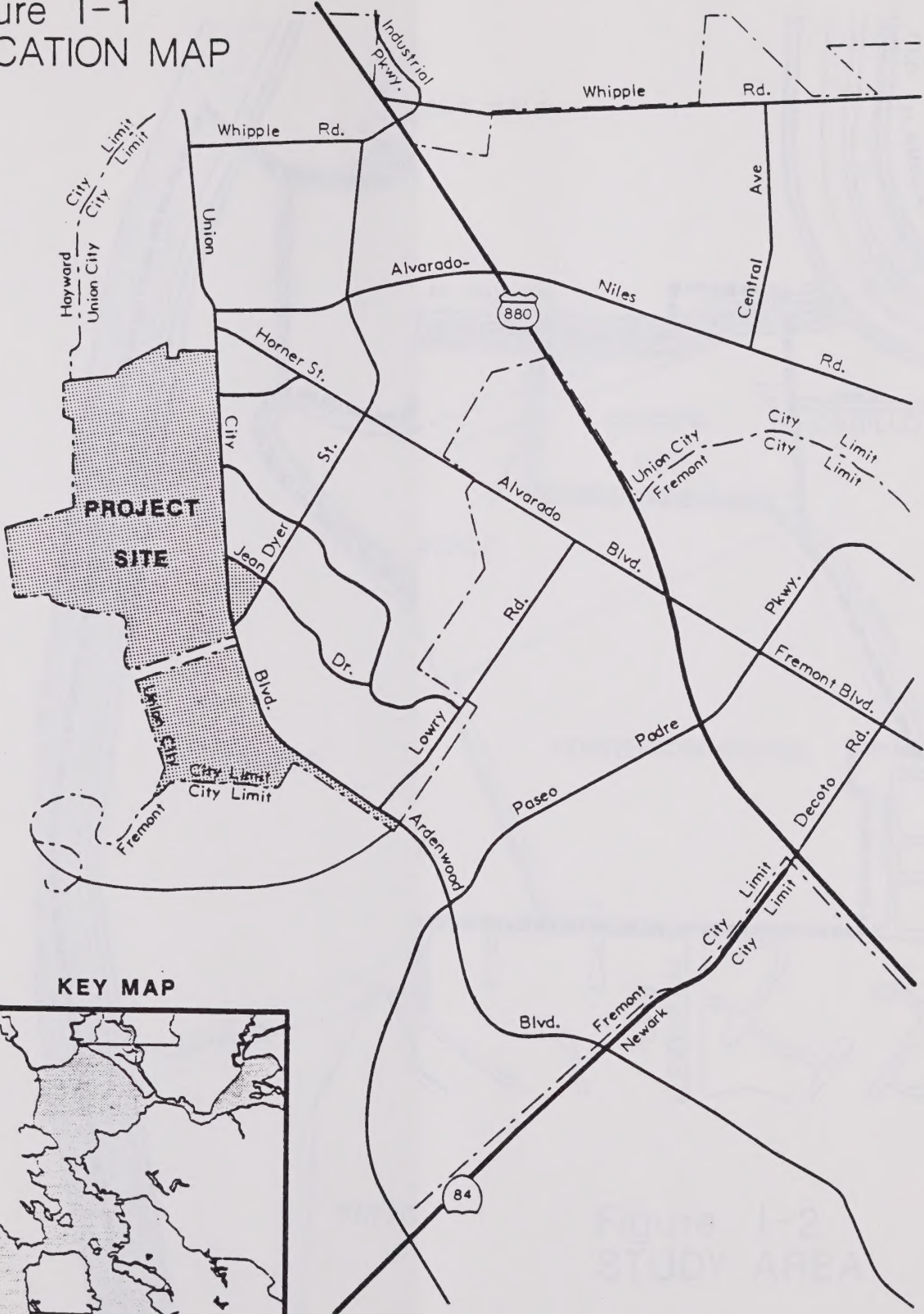
Existing Conditions

The study area is a prime development site in Union City. With Union City Boulevard offering direct connections to State Highways 92 and 84, and Alvarado Boulevard and Smith Street linking the area with Interstate 880 1-2 miles to the east, the 511 Area enjoys fairly good local and regional access. Utility hook-ups are available, and there is sufficient capacity to accommodate future development. The study area is adjacent to Old Alvarado, an area designated by the City for commercial revitalization, and is in the midst of a number of large development projects in Union City, Hayward, and Fremont. The Alvarado Industrial Park (160 acres), the Industrial/Research and Development (203 acres) associated with Hayward's The Shorelands, and the Ardenwood Technical Park (285 acres) in Fremont—all signify substantial nearby economic activity and growth. The 511 Area offers a unique opportunity to be a residential community for these new employees and a customer base to patronize shopping, dining, and entertainment businesses expected to locate in Old Alvarado.

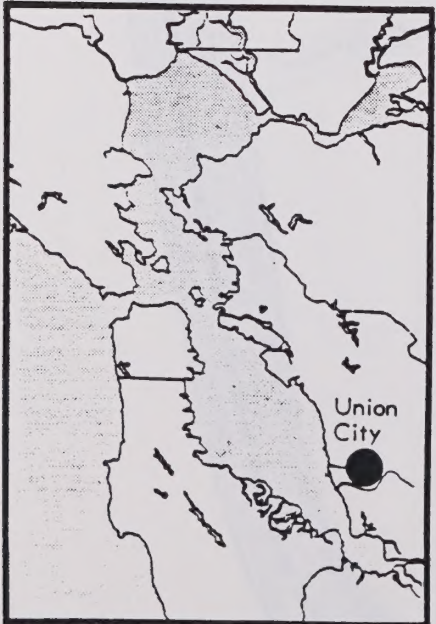
Presently, more than 90% of the study area is undeveloped (see Figure I-3). The only development is the Union Sanitary District (USD) Alvarado Wastewater Treatment Plant and the Turk Island sanitary landfill. The USD facility occupies approximately 22 acres, in the northwestern corner of the study area off Benson Road. The landfill encompasses a 50-acre site located west of the PG&E right-of-way in the central portion of the study area. Much of the undeveloped land (over 60%) in the 511 Area is owned by the Alameda County Flood Control District and is used for flood control management and croplands. Private lands are either in agricultural use or barren fill.

There are a number of issues that must be addressed in planning the 834 acres of undeveloped land in the 511 Area. First, over two-thirds of the area, covering both public and private lands, is recognized as wetlands within which a diverse biological community resides, including the endangered salt marsh harvest mouse. Any development of the site must protect the integrity of these ecologically sensitive

Figure 1-1
LOCATION MAP

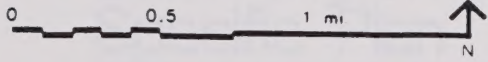


KEY MAP



Union City 511 Area Specific Plan

Sedway Cooke Associates





Owner	Acreage
Ponderosa Homes	111.5
Carillo	0.2
Union Sanitary District (USD)	22.0
Alameda County Flood Control District (ACFCD)	514.4
Munster	44.0
Turk Island Co.	118.3
City of Hayward	3.6
Beretta	32.1
PG&E	1.9
State of California	2.2
Patterson	43.7
O'Neil & Curran	12.0
	905.9

Figure 1-2
STUDY AREA

Union City 511 Area Specific Plan

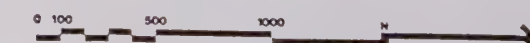
Sedway Cooke Associates



Figure I-3
EXISTING LAND USES

Union City 511 Area Specific Plan

Sedway Cooke Associates



resources and meet approval of the various state and federal agencies which have jurisdiction over the resources. Second, the wastewater treatment plant has a history of odor problems which must be recognized in designating and siting future land uses. Moreover, recent plant expansion will greatly increase the use of chlorine, which poses a significant public health risk were an accidental spill to occur. Third, the landfill, which closed in June 1986, could potentially generate odors and gas from the decomposition of the disposed waste. This, too, represents a potential health risk which needs to be considered in future site planning. Finally, in addition to these "man-made" hazards, the study area is subject to flooding and is characterized by poorly drained soils that pose severe limitations for development.

In short, the 511 Area represents a major opportunity to support local and regional economic growth. But man-made and natural hazards and resources present a complex range of site conditions that will determine the type, location, and intensity of future development. Because of this need to consciously balance development and conservation objectives, the City is preparing this amendment to its General Plan and a "Specific Plan" intended to implement the broader policy statements contained in this General Plan Amendment.

B. CURRENT GENERAL PLAN

The City's Land Use Element of the General Plan designates the 511 Area for agriculture, special industrial, low density residential, and some retail commercial uses. The City of Fremont designates its portion of the study area for very low density residential and open space. Hayward's general plan has no land use designation for the portion of the 511 Area which is within its jurisdiction. The current General Plan land use designations are shown on Figure 1-4. Residential development, at 190 acres, would occupy about 21% of the 511 Area. The retail commercial designation represents 12 acres. Special industrial uses, encompassing warehousing, manufacturing, and office activities, total 97 acres, or about 11% of the study area. The balance of the area's 603 acres is designated for agriculture.

The General Plan road network identifies two key thoroughfares serving the study area: Union City Boulevard and a bypass road that would traverse the 511 Area and help divert traffic from Union City Boulevard around Old Alvarado.

The Open Space Element proposes that the western half of the 511 Area (that area designated for agriculture in the Land Use Element) be retained as open space for public safety, the public's health and welfare, resource preservation, and agriculture. An outdoor recreational facility is proposed at the sanitary landfill site, and a network of pedestrian, bicycle, and equestrian trails is recommended, using the flood control levees and the PG&E power transmission right-of-way. The trails are intended to connect with those of the East Bay Regional Park District. The Conservation Element contains a number of policies which are applicable to the 511 Area, including protection of wildlife habitats and water resources. The Conservation Element also encourages reclamation of treated wastewater at some point in the future.



II. GENERAL PLAN AMENDMENT

The following text and illustrations amend the existing Union City General Plan. They are organized to correspond to current General Plan Elements. The amendments clarify existing policies affecting the 511 Area and reflect changes that would result from the amended land use designations.

The proposed changes would affect five General Plan elements: land use, circulation, noise, housing, and open space. The current Land Use Element consists solely of a map which designates land uses. The proposed amendments to the Land Use Element consist of a map and text which describes the designations and policies associated with development of the 511 Area. A proposed circulation policy diagram for the 511 Area would revise the current Circulation Element. Proposed amendments to the Noise Element include revisions to Map 2: 1995 Noise Contours and adding a footnote to a table describing future noise impacts in Union City. The proposed amendments to the Housing Element reflect changes to the projected population and the implementation program for the 511 Area.

Finally, the proposed revisions to the Open Space Element would clarify acceptable uses for the buffer zone that surrounds the wastewater treatment plant. A proposed Environmental Management policy diagram for the 511 Area would supplement existing Open Space Element illustrations, and an appendix is attached (Appendix A, incorporated herein by reference) to supplement the existing Open Space Element appendix which is entitled "Ecological Report on Marshes." There are no changes to the existing Conservation, Seismic Safety, and Safety Elements.

A. LAND USE ELEMENT AMENDMENTS

Figure II-1 amends the existing Land Use Element for the 511 Area. The land use designations are amended to include a residential designation for dwelling units at a density of 3-10 per gross acre:

3-10 dwelling units/gross acre—This residential designation is intended for areas sufficiently large to accommodate a diversity of housing types and densities, including detached and attached single-family units, secondary units, duplexes, triplexes, and fourplexes. Because the intent of this designation is to encourage harmonious, well-planned residential neighborhoods, it is applied only where specific plans have been approved.

The following policies shall guide development in the 511 Area and should be implemented by a Specific Plan, which has been prepared concurrently with the preparation of this Amendment.

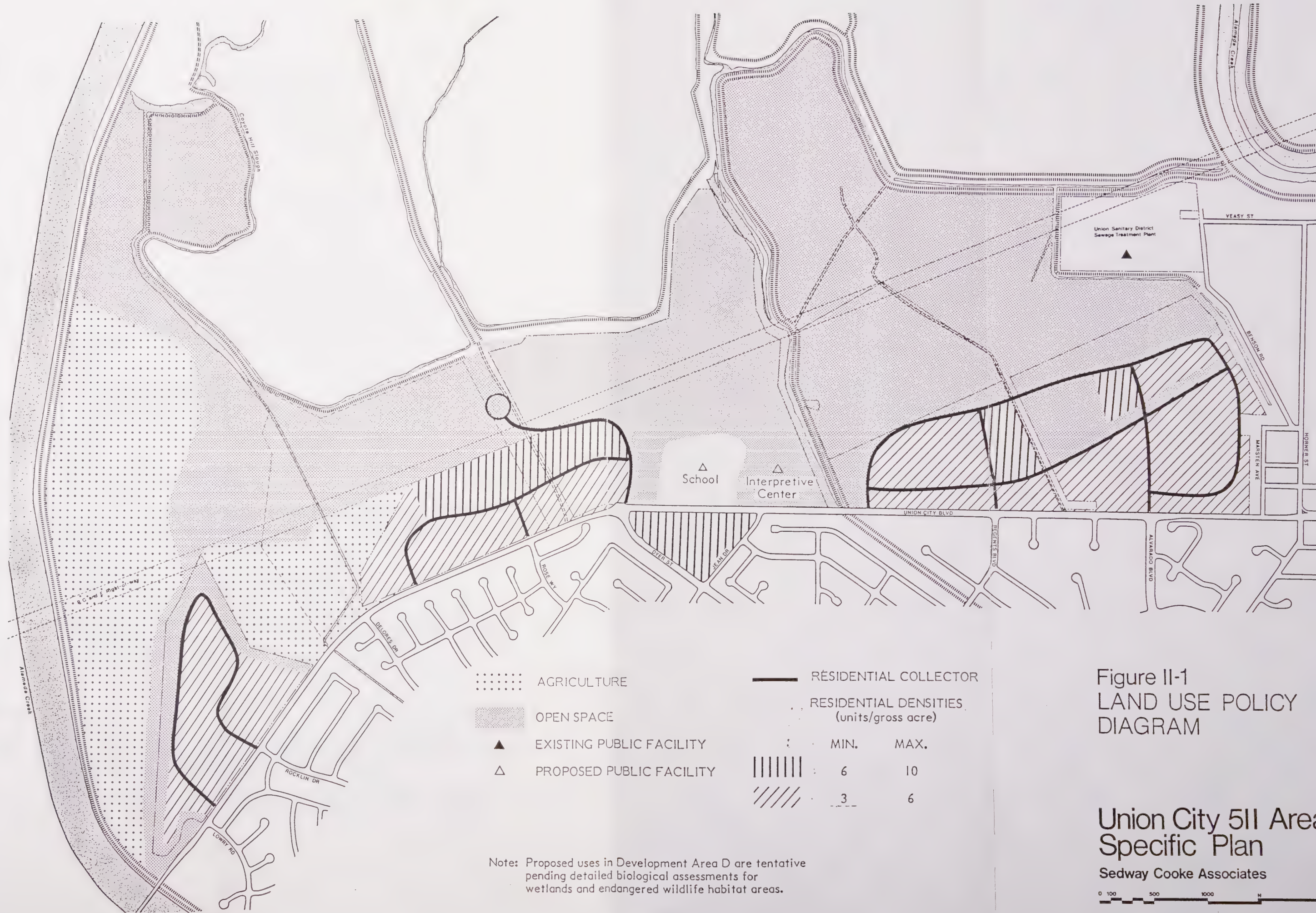


Figure II-1
LAND USE POLICY
DIAGRAM

Union City 5II Area Specific Plan

Sedway Cooke Associates



Land Use

Policy 1: Encourage high-quality residential development.

- Promote opportunities to construct upscale single family homes.
- Allow a mix of housing types and densities to permit a diversity of household sizes within the area.
- Create a residential community that is compatible with existing residential neighborhoods across Union City Boulevard.
- Organize residential units into small clusters to promote social interaction among residents.

Policy 2: Encourage residential development that will create a strong market for proposed retail activities in the Old Alvarado commercial district.

- Encourage as much residential development as possible to create the largest possible market base for goods and services available in Old Alvarado.
- Prohibit commercial development in the 511 Area that could compete with or detract from City efforts to stimulate economic revitalization in Old Alvarado.

Policy 3: Create a residential community with high-quality amenities.

- Provide neighborhood parks of sufficient size to adequately meet the recreational needs of residents.
- Where not detrimental to the natural resources, take advantage of the area's proximity to those resources to enhance public access and understanding of the natural environment.
- Plan the area to minimize residents' exposure to nuisances from noise, odors, heavy traffic, and unappealing views.
- Encourage enhanced educational opportunities by locating school facilities near resources or sites that offer unique learning experiences, such as proximate to an outdoor nature laboratory, a wildlife sanctuary, etc.

Circulation

Policy 4: Develop an efficient circulation system to accommodate both locally generated and regional through-traffic traveling on Union City Boulevard, recognizing the residential character of the area.

- Improve Union City Boulevard so that it has adequate capacity to accommodate traffic generated by development in the 511 Area.

- Ensure that circulation improvements within the 511 Area are consistent with those already made to Union City Boulevard north and south of the 511 Area.
- Control the number of access points and intersections with Union City Boulevard to maintain efficient traffic flow on the boulevard and to minimize the potential for accidents.
- Design the internal circulation for the 511 Area so that it provides local access to proposed residences and facilities and so that it discourages motorists from traveling through the area and bypassing Union City Boulevard.
- Provide access to the open space/recreational facility proposed for the Turk Island landfill so that it minimizes impacts to residents in the 511 Area.
- Reduce impacts of Union City Boulevard traffic on residential areas south of Old Alvarado by minimizing truck operations in that area.

Policy 5: Develop a safe, convenient bicycle and pedestrian circulation system, offering easy access to schools, recreational facilities, and the citywide and regional trail systems.

- Require development of a bicycle and pedestrian circulation system that is separated and protected from automobile traffic.
- To the extent possible, use the flood control levees and the PG&E right-of-way as part of the bicycle and pedestrian circulation system.
- Link the local bicycle and pedestrian circulation system with the citywide and regional trail systems and integrate the local system with the open space network.
- Provide bicycle and pedestrian links to Coyote Hills Regional Park.

Utilities

Policy 6: Encourage timely, cost-effective construction of all necessary public improvements.

- Develop feasible financing mechanisms for capital improvements, so that future residents of the 511 Area pay their fair share but are not subjected to burdensome fees, taxes, or other charges to pay for those improvements.
- Require all new utility lines serving development in the 511 Area to be installed underground.
- Plan development so that it minimizes disruption of existing utility lines and easements.

- Coordinate installation of roadway, sewer, water, storm drainage, and gas and electricity service to minimize the costs of servicing new development.
- Phase development so that the public services needed to serve new residents are available.

Environmental Management

Policy 7: Minimize potential conflicts between the sewage treatment plant, the sanitary landfill, and nearby residential areas.

- Require that appropriate improvements and procedures be implemented by the Union Sanitary District to minimize potential odor problems and public health risks from accidental chlorine spills at the wastewater treatment plant.
- Require proper closure of the sanitary landfill and an ongoing system to monitor gas migration in the area around the facility.
- Limit the types of activities permitted in the immediate vicinity of the wastewater treatment plant to reduce public exposure to odor nuisances and health risks.
- Reuse the sanitary landfill for open space/recreational purposes when it is determined such uses would not expose the public to any health hazards.
- Design the internal circulation system for the 511 Area and control transport vehicle routes to minimize potential chlorine spills from transport vehicles in or adjacent to residential areas.

Policy 8: Allow development only where it will not adversely affect ecologically sensitive resources, such as wetlands and habitats for water birds, species of special concern to the state, and threatened or endangered species.

- Plan land uses to minimize adverse impacts on wetlands and wildlife habitats.
- Use the U.S. Army Corps of Engineers' definition of wetlands and the Corps' "Wetland Determination Manual" to delineate wetland boundaries.
- Develop setbacks and buffer zones to prevent unnecessary intrusion into ecologically sensitive areas.
- Create a program for ongoing management of the natural resource areas to ensure their environmental value is maintained.
- Create opportunities for the public to view the wetlands and habitat areas without adversely affecting sensitive plant and animal communities.

- Avoid, as much as possible, development of any wetlands; and where unavoidable, replace any wetlands acreage that is filled or destroyed with a like acreage elsewhere.
- Retain in open space some upland areas adjacent to wetlands that can enhance the range and habitat for the area's wildlife.

Policy 9: Review development to ensure that adequate measures are taken to minimize threats to public safety and property damage from natural hazards.

- Require structures to be protected from inundation from a 100-year flood.
- To the maximum extent possible, require structures and utility lines to be designed to avoid failure during groundshaking from an earthquake.
- Provide adequate site drainage to minimize localized problems of ponding.

Community Design

Policy 10: Promote development that fosters livability and a sense of place.

- Establish overall design guidelines for the study area, but allow architectural, landscape, and signage diversity among different neighborhoods to give each neighborhood its own identity.
- Link individual neighborhoods with open space corridors and bicycle and pedestrian paths.
- Locate recreational facilities within convenient walking or bicycling distance from all residential areas.
- Use landscaping and walls to help accent and distinguish different neighborhoods, as well as to signal transitions from public areas to private areas.
- Whenever possible, avoid road alignments that result in long stretches, which encourage speeding by motorists and are visually monotonous.
- Review developments to assure that structures are sited for control of climatic conditions, such as solar orientation, wind, and shadow patterns.

Policy 11: Encourage site design that is sensitive to residents' needs for privacy and security.

- Require adequate spacing between buildings so that residents are separated from neighbors and have adequate privacy.

- Design open space areas, bicycle and pedestrian systems, and housing clusters so that there is as much informal surveillance by people as possible to deter opportunities to commit crimes.
- Whenever possible, avoid backing residences onto trails or recreational facilities, to reduce opportunities to commit crimes.
- Review lighting and landscaping plans to ensure that they respond to public safety concerns.
- Implement provisions of the City's Crime Prevention Ordinance.

Policy 12: Encourage development that is visually and functionally compatible with the surrounding residential neighborhoods.

- Maintain in the 511 Area the low height and low density development pattern found in the adjacent neighborhoods.
- Create a visually interesting view of the 511 Area for residents to the east by varying the frontage along Union City Boulevard with landscaping, walls, and open undeveloped stretches.
- Accent entrances to neighborhoods in the 511 Area with varied landscaping and signage treatment.
- Provide various points where residents on the east side of Union City Boulevard can enter the 511 Area and access the internal bicycle and pedestrian circulation system.

B. CIRCULATION ELEMENT AMENDMENTS

Figure 11-2 amends the Circulation Element for the 511 Area. The amendments include:

- elimination of the bypass road;
- widening of Union City Boulevard to a 110-foot right-of-way through the 511 Area and the Old Alvarado Commercial District, where only a two-lane roadway was proposed as part of the Old Alvarado Revitalization and Development Plan;
- a network of residential collectors linked to Union City Boulevard to provide local access; and
- a proposed trail system facilitating local circulation in the 511 Area as well as access to the citywide and regional trail system.



Figure II-2
CIRCULATION
POLICY DIAGRAM

Union City 511 Area
Specific Plan

Sedway Cooke Associates



Figure II-3 illustrates typical cross-sections for the streets shown in the Circulation Policy Diagram. Figure II-3 also illustrates the cross-sections to be used for minor residential streets. These streets include cul-de-sacs, loops, and forks that provide direct access to residences and connect them with residential collectors. Minor residential streets are not shown on the Circulation Policy Diagram since their alignment should be left to the discretion of individual applicants/developers.

C. NOISE ELEMENT AMENDMENTS

Figure II-4 amends the existing 1995 noise contours to reflect new cumulative traffic data. It should be noted that the traffic projections used to prepare the noise contours are based on build-out conditions and therefore depict conditions worse than likely to occur in 1995. The proportion of the 511 Area and surrounding areas expected to be developed by 1995 was not available.

Add the following footnote to Table 10 (Number of Persons Exposed to Various Levels of Noise) on page 31 of the existing Noise Element:

¹Projections for 1995 do not reflect the 1986 General Plan Amendment for the Union City 511 Area, which changes the designation of approximately 115 acres of land in that area from special industrial, retail commercial, and commercial uses to residential. Projected noise levels are determined based on projected average daily vehicle trips (ADT). The original land use designations for the 511 Area would have allowed development that would generate about 26,500 ADT; whereas the General Plan Amendment will allow development that will generate from 8,600 to a maximum of about 16,700 ADT at build-out. This indicates that 1995 figures will be lower with the 1986 General Plan Amendment for the 511 Area. However, neither the figures in this table nor the projected ADT under the Amendment account for cumulative traffic generated by development projects in the surrounding areas. Thus, it is likely that actual 1995 figures are equal to or higher than those shown in the table.

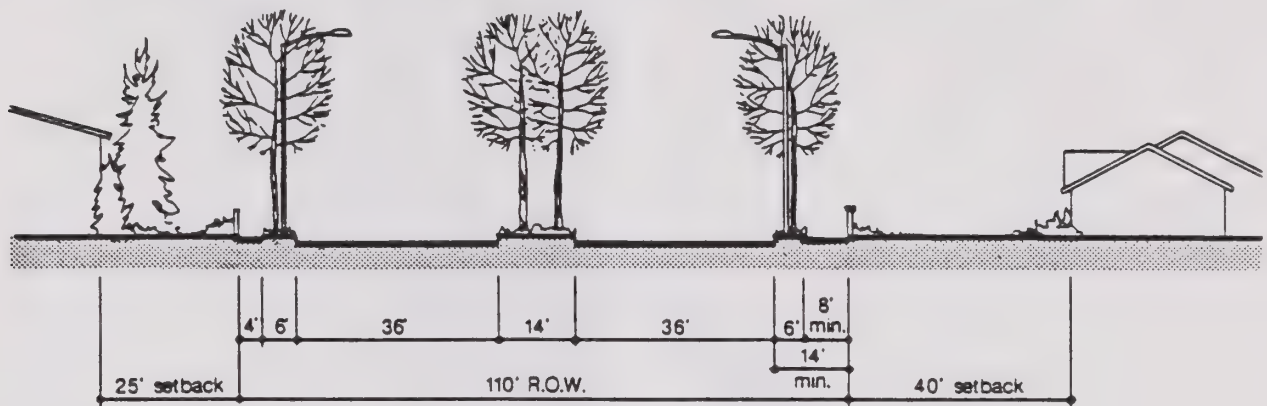
D. HOUSING ELEMENT AMENDMENTS

On page 34, add a footnote 2 at the bottom of Table II-4 (Population Projections, Union City and Selected Areas, 1980-2005):

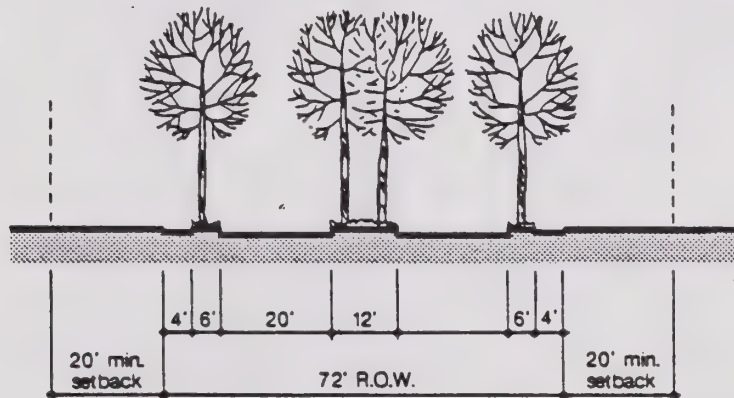
²Population figures do not reflect the 1986 General Plan Amendment for the Union City 511 Area, which designates approximately 78 additional acres of land for residential use in that area and changes the designation on a portion of the area from residential to open space. As a result, the 1990, 1995, 2000 and 2005 figures are low for both Union City and Alameda County. The additional 78 acres are estimated to accommodate about 1,800 more persons at maximum build-out. The reduction of 30 residential acres for open space would decrease the population by about 700 persons. The net change of plus 1,100 persons represents less than 7% of the projected Union City population for 2005, and does not significantly change the table. ABAG publishes population projections every few years; these changes will be accounted for in the next projections.

Figure II-3 STREET CLASSIFICATION

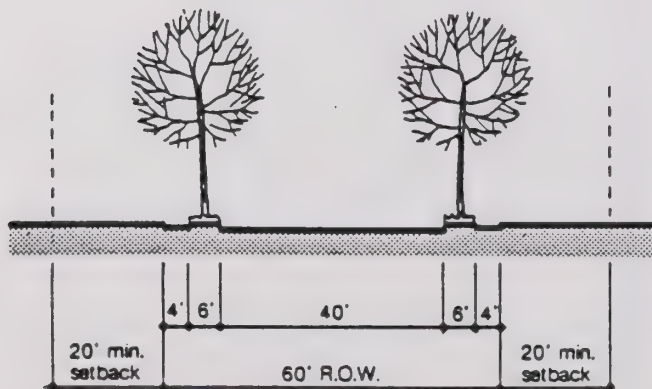
SECTION A: UNION CITY BOULEVARD - MAJOR ARTERIAL



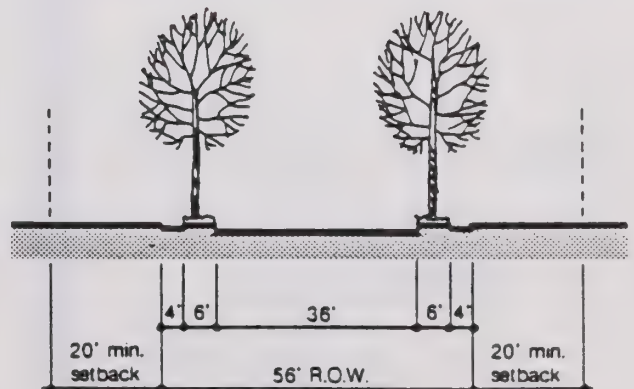
SECTION B: RESIDENTIAL COLLECTOR - GATEWAY



SECTION C: RESIDENTIAL COLLECTOR



SECTION D: MINOR RESIDENTIAL COLLECTOR



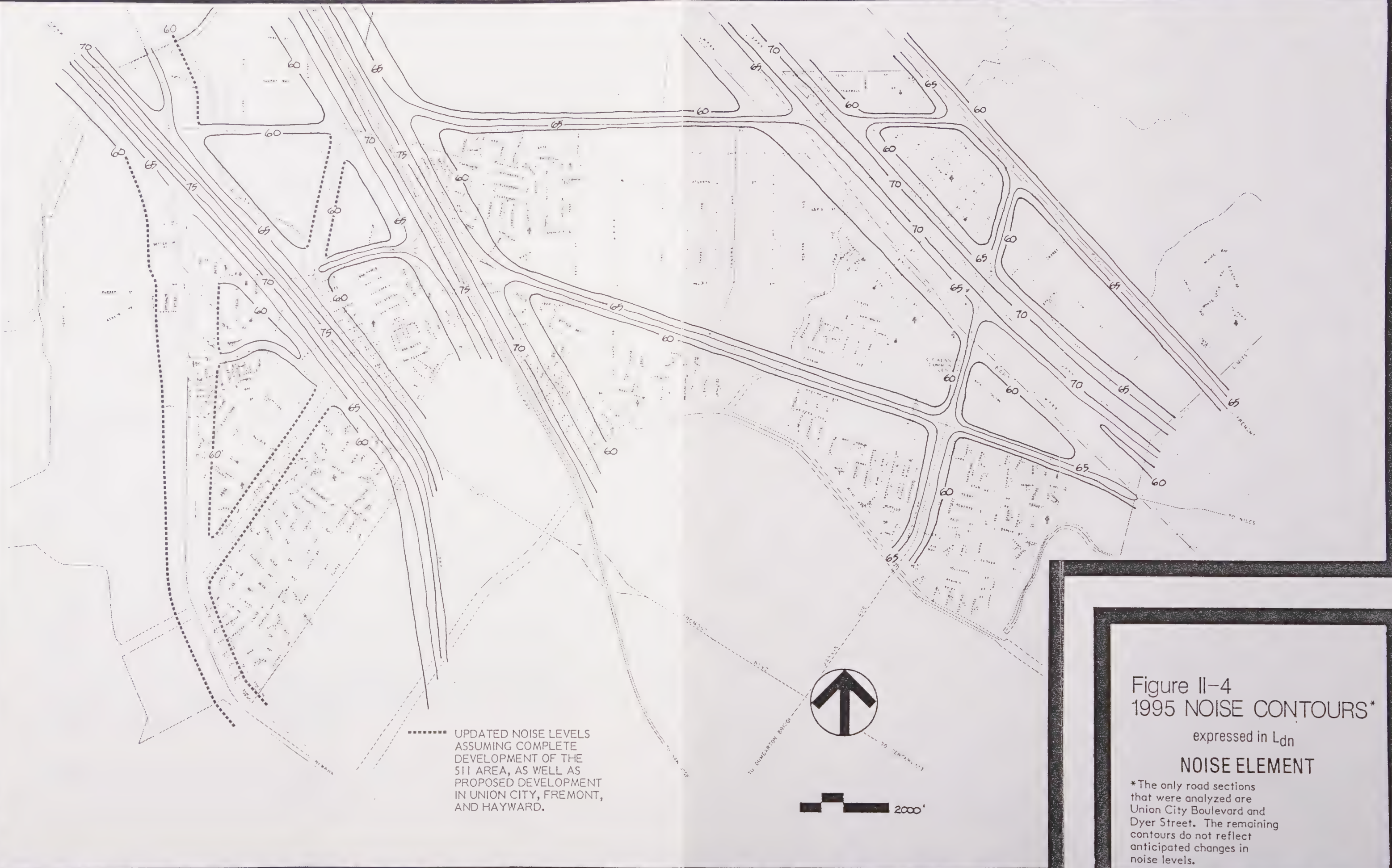


Figure II-4
 1995 NOISE CONTOURS*
 expressed in L_{dn}
 NOISE ELEMENT

*The only road sections
 that were analyzed are
 Union City Boulevard and
 Dyer Street. The remaining
 contours do not reflect
 anticipated changes in
 noise levels.

On page 53, add the following at the bottom of Table II-18 (Jobs and Employed Residents, Union City, 1980-2005):

¹Employment figures do not reflect the 1986 General Plan Amendment for the Union City 511 Area, which changes the designation of approximately 115 acres of land in that area from special industrial, retail commercial, and commercial uses to residential. As a result, the 1990, 1995, 2000 and 2005 employment figures are high. City employment projections for these non-residential designations in the 511 Area total about 3,100 employees at build-out. If this number of employees were expected in ABAG's projection by 2005, then the 2005 figure would be about 20% less. ABAG publishes employment projections every few years; these changes will be accounted for in the next projections.

On page 86, delete the last sentence of the third complete paragraph, and replace Table II-48 with the following:

TABLE II-48
VACANT RESIDENTIALLY ZONED LAND
Union City
August 1986

<u>Zoning Category</u>	<u>Vacant Land (Acres)</u>	<u># Parcels</u>	<u>Potential Units</u>
R 5000	6.8	26 ¹	110
RM 2500	5.0	3	86
RM 1500	3.0	2	257
RS 4500	0.2	1	1
RS 6000	16.0	23 ²	97
511 Area Specific Plan ³	<u>186.6</u>	<u>67</u>	<u>1,365</u>
Total	<u>217.6</u>	<u>122</u>	<u>1,916</u>

¹Includes three parcels which are of substandard size for development at minimum density.

²Includes four parcels which are of substandard size for development at minimum density.

³A draft specific plan for the 511 Area, completed in August 1986, supersedes the zoning ordinance. Under the specific plan, approximately 78 additional acres are designated for residential use, and approximately 30 acres of currently designated residential would be converted to open space.

Source: Union City Community Development Department, Vacant Land Survey, March 1986; Mintier Harnish & Associates.

Replace Table II-49 on page 87 with the following:

TABLE II-49
VACANT NON-RESIDENTIALLY ZONED LAND
Union City
August 1986

<u>Zoning Category</u>	<u>Land (Acres)</u>	<u># Parcels</u>
Agricultural (A) ¹	4,494.1	7
Neighborhood Commercial (CN) ²	6.9	8
Specialty Commercial (CC)	2.8	6
Community Commercial (CC)	51.3	10
Thoroughfare Commercial (CT)	0.7	2
Visitor and Recreation Commercial (CVR)	10.2	3
General Commercial (GC)	1.9	3
Central Business District (CBD) ³	9.0	2
Professional and Administrative Commercial (CPA)	3.9	3
General Industrial (MG)	73.6	11
Intermediate Industrial (MI)	306.2	33
Light Industrial (ML)	166.9	33
Special Industrial (MS) ²	<u>104.5</u>	<u>7</u>
Total	5,232.0	128

¹Excludes land owned by the Alameda County Flood Control District

²In the 511 Area, approximately 12 acres are zoned Neighborhood Commercial and 33.9 acres are zoned Special Industrial. A draft specific plan for the area, completed in August 1986, supersedes the zoning ordinance. Under the specific plan, the land which is zoned Neighborhood Commercial and Special Industrial is designated entirely for residential use.

³The CBD zone allows for limited high rise residential development.

Source: Union City Community Development Department, Vacant Land Survey, March 1986; Mintier Harnish & Associates.

E. OPEN SPACE ELEMENT AMENDMENTS

Replace the last paragraph on pages 23-24 with the following:

"The area which should be retained as a buffer zone east and south of the wastewater treatment plant may contain the following uses:

- agriculture;
- open space;
- flood control management; or
- passive recreation in a natural or near-natural state."

Figure II-5 amends the existing Open Space Element map by providing further information about proposed open space policies for the 511 Area. Specifically, it:

- revises the Turk Island Sanitary Landfill from open space for health and welfare to open space for a regional park;
- revises some of the existing agriculture designations to a wetlands/habitat area designation which is more consistent with the existing resource preservation designation; and
- more specifically identifies the locations for outdoor recreation.

Figure II-2, presented earlier in the proposed amendments to the Circulation Element, recommends a trail system for pedestrian, bicycle, and equestrian use. The proposed trail system would supplement that system described in the existing Open Space Element, Trail System (Bicycle System) Map T3 and Trail System (Hiking and Equestrian Trails) Map T4. The system shown in Figure II-2 would also amend the City's Trail System (Map T3) by changing the bicycle facility along Union City Boulevard from a bicycle "lane" to a bicycle "trail."

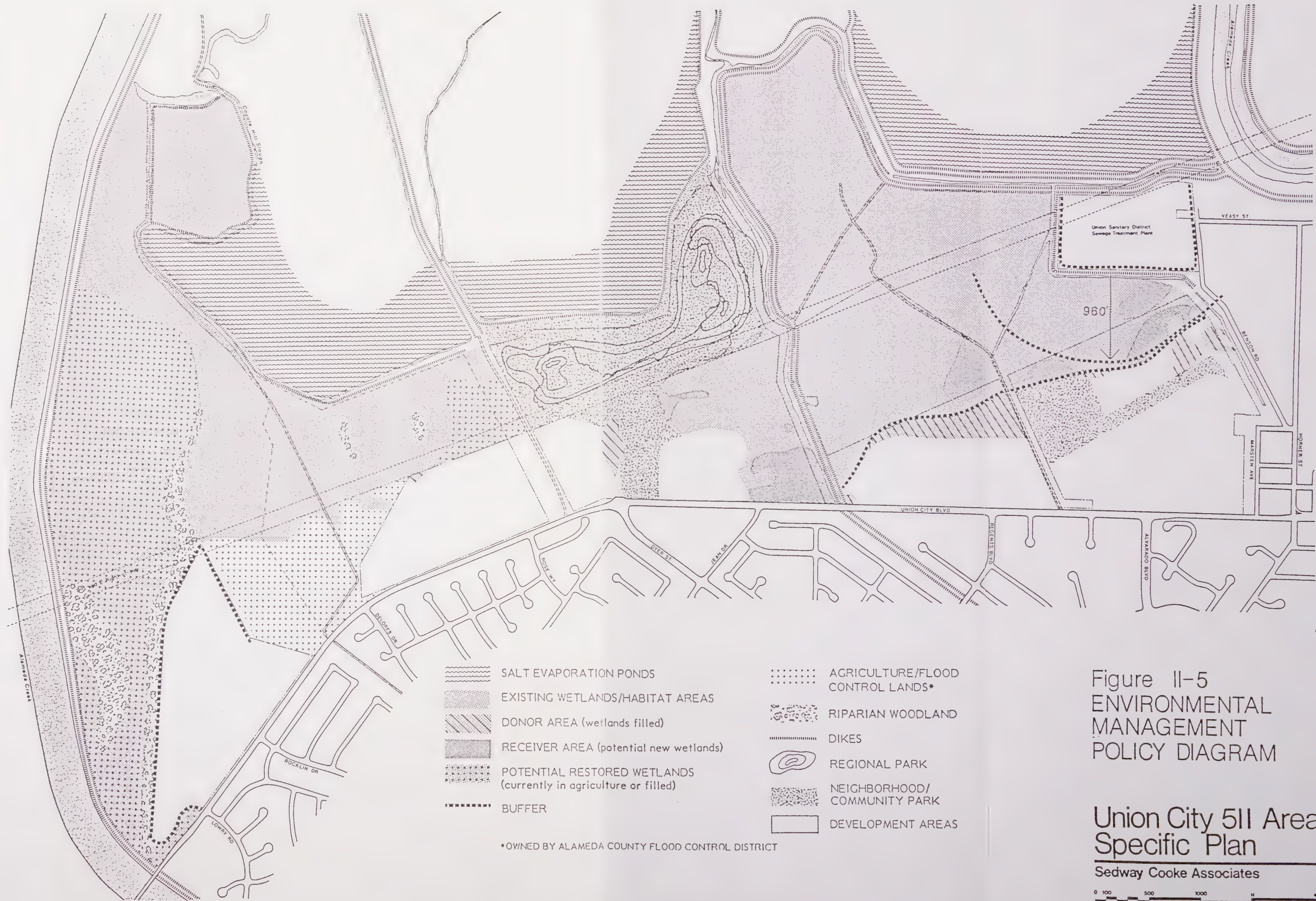


Figure 11-5
ENVIRONMENTAL
MANAGEMENT
POLICY DIAGRAM

Union City 511 Area
Specific Plan

Sedway Cooke Associates



APPENDIX A

PLANT AND ANIMAL COMMUNITIES
IN THE 511 AREA

Western Ecological Services Company

August 1986

PLANT AND ANIMAL COMMUNITIES IN THE 511 AREA

Introduction

The 511 Area encompasses low-lying marshland and hayed grassland between the developed area of Union City and San Francisco Bay. Wildlife, including migratory waterfowl, rare or endangered marsh species, and a variety of upland species utilize habitats within the 511 Area. The purpose of this study is to provide a baseline inventory of the biotic resources for planning in the 511 Area. Delineation of wetland boundaries and identification of endangered species habitat are the primary tasks of this study. The probable historic margins of the marshland of San Francisco Bay extend into the 511 Area along most of its western boundary¹. An early soil survey map² shows salt marsh being more extensive than the Nichols and Wright map in some parts of the 511 Area and less extensive in others. Both maps locate the salt marsh boundary as close as 300 feet from Union City Boulevard (formerly Marsh Road). Holmes and Nelson³ report the clay loam "in the Alvarado locality is rather compact, poorly drained, carries alkali, and merges its lower parts with tidal marsh." The soil survey also reports the area as subject to periodic overflow. Since most of the northern half of the 511 Area is within the 5-foot contour,⁴ it is subject to natural flooding by tides and runoff. Tidal waters are likely to affect marsh development up to approximately this elevation.⁵

Due to the influence saturated soil has on plant life, vegetation in the northern half of the 511 Area west of Union City Boulevard was probably dominated by wetland species. To the south, where soil type changes and elevations above 5 feet are more extensive, wetland vegetation probably made a gradual transition to upland vegetation. When dikes and drainage channels were constructed during historical times, the influence tides and flooding had on the vegetation was ameliorated. However, modern soil surveys classify all soils in the 511 Area as having hydric moisture

¹D. R. Nichols and N. A. Wright, Preliminary Map of Historic Marshlands, San Francisco Bay, California, U.S. Geological Survey, S.F. Bay Region Environmental and Planning Study, Contribution #9, 1971.

²L. C. Holmes and J. W. Nelson, Reconnaissance Soil Survey of the San Francisco Bay Region, California, Advance Sheets--Field Operations of the Bureau of Soils, 1914.

³Ibid.

⁴U.S. Geological Survey (USGS), Newark 7.5 Minute Quadrangle, 1980.

⁵Jones & Stokes Associates, Inc., Protection and Restoration of San Francisco Bay Fish and Wildlife Habitat, Volume II: Habitat Description, Use, and Delineation. Report prepared for U.S. Fish and Wildlife Service and California Department of Fish and Game, 1979.

regimes, a designation indicating that prolonged soil saturation and/or ponding still occurs.¹

Currently, ponds, marshes, cultivated fields, and pasture occur within the boundaries of the diked historic baylands.² Wetland habitats in the 511 Area include diked salt marsh, freshwater marsh, freshwater ponds, ruderal wetland, and barren wetland.³ Pasture, hayfields, and cultivated land occur both above and below the 5-foot contour. A map prepared by the U.S. Fish and Wildlife Service (FWS) shows wetlands occupying all of the area west of Union City Boulevard and south to a point inland just east of the Turk Island Sanitary Landfill⁴. In the southern half of the 511 Area, the map depicts wetlands south of the Hayward-Union City boundary and west of the PG&E transmission line. Some fingers of wetland are shown as projecting further east. The riparian groves in the extreme south end of the 511 Area are also classified as wetlands.

There are three components used to define a wetland: hydrology, soils, and vegetation. Definitions for wetland vary depending on the agency or interests involved. The FWS considers either hydrologic, soil, or vegetational evidence sufficient to determine whether an area is wetland or not.⁵ Interest by FWS primarily concerns the effect on wildlife populations and endangered species. The U.S. Army Corps of Engineers (COE) requires the presence of all three wetland components before considering an area a wetland.⁶ COE interest stems from their responsibility for enforcing Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. In essence, any discharge of fill into wetlands adjacent to navigable water must be authorized via a permit by COE.

Vegetation

Methodology. Criteria used to establish wetland boundaries were taken from the COE "Wetlands Determination Manual."⁷ This methodology requires evidence of

¹Soil Conservation Service, Soil Taxonomy. U.S. Department of Agriculture, Agriculture Handbook No. 436, 1975.

²San Francisco Bay Conservation and Development Commission (BCDC), Diked Historic Baylands of San Francisco Bay, BCDC, San Francisco, 1982; USGS, op. cit., 1980.

³Jones & Stokes Associates, Inc., 1979, op. cit.

⁴National Wetlands Inventory (NWI), Newark 7.5 Minute Quadrangle, U.S. Fish and Wildlife Service, Portland, Oregon, 1985.

⁵L. M. Cowardin, V. Carter, E. C. Golet, and E. T. LaRoe, Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service, Biological Services Program (FWS/OBS-79/31), 1979.

⁶D. R. Sanders, Sr., W. B. Parker, S. W. Forsyth, and R. T. Huffman, Wetland Delineation Manual, Parts I-IV. U.S. Army Corps of Engineers, Wetlands Research Program, Technical Report 4-84, 1985.

⁷Ibid.

hydrology, soil, and vegetation indicative of a wetland environment before it can be classified as wetland. All three elements must be present to be determined a wetland. The number of vegetation types for a given area was determined from aerial photographs and onsite inspection. Each type was assessed for evidence of wetland conditions during field surveys which took place on the following dates: April 29, 30 and June 20, 24, 1986. Visual estimation of the boundary between upland and wetland were mapped onto aerial photographs (1" = 500' and 1" = 200').

An area was mapped as wetland vegetation if it was dominated by wetland species. Species were identified using Munz and Keck.¹ The wetland indicator status of a species was taken from a draft plant list for the San Francisco Bay Area,² or a list supplied by FWS (1986). (Definitions for wetland terms appear in Table 1.) Plants were also judged for wetland affinity based on observations in the 511 Area. Some plants on the list had been assigned classification as upland species, but observation of the 511 Area habitats in which they are found indicated they are also adapted for life in saturated soils. Italian ryegrass is one species listed as an upland plant but observed to be abundant in wetlands. Throughout the survey it was considered a facultative species, a status also conferred to it in other wetland determinations.³ Scientific names and wetland indicator status of species in the 511 Area appear in the following section.

Since all soils in the 511 Area (except for the filled areas around the Turk Island Sanitary Disposal Site) possess aquic moisture regimes (i.e., prolonged saturation by ground water), they have inherent characteristics qualifying them as wetland soils by the COE.⁴ Even so, soil samples were taken to 25 centimeter (cm) depth in all areas possessing wetland vegetation as a means of confirming their classification by the Soil Conservation Service.⁵ Evidence of mottling and anaerobic soil conditions was assessed with the aid of a Munsell Soil Color Chart (a series of pigments used to assess soil color).

Hydrologic wetland indicators were assessed in all areas possessing wetland vegetation and soils. Dried remnant algal mats provide evidence of algal growth where water had previously ponded. Saturated and moist soils indicate that the water table is close to the soil surface within a few months prior to sampling. Topographic features, such as swales, which indicate concentration and drainage of surface waters, are considered indirect hydrologic evidence. In areas where vegetation is

¹P. A. Munz and D. D. Keck, A California Flora and Supplement. University of California Press, Berkeley, 1968.

²Bay Planning Coalition, Wetland Status for a List of Plants from San Francisco Bay (Draft). Bay Planning Coalition/U.S. Army Corps of Engineers: Prevalence of Vegetation Workshop, April 23, 1986.

³Terry Huffman, Ph.D., Botanist, Wetlands Determination Consultant, Personal Communication.

⁴Sanders, et al., 1985, op. cit.

⁵L. E. Welch, Soil Survey of Alameda County, California, Western Park. Soil Conservation Service, National Cooperative Soil Survey, U.S. Government Printing Office: 1980-273-05816, 1981.

TABLE 1: WETLAND INDICATOR STATUS CATEGORIES USED BY NATIONAL WETLANDS INVENTORY

<u>Indicator Status</u>	<u>Indicator Symbol</u>	<u>Definition</u>
OBLIGATE HYDROPHYTE	OBL	A plant species that is generally (greater than 99% of the time) found only in wet-under natural conditions, but which may persist in areas converted to uplands (non-wetlands) or exist in upland sites if planted there by man.
FACULTATIVE WETLAND	FACW	A plant species that usually (67-99% of the time) is found in wetlands, but which may be found occasionally in non-wetlands under natural conditions.
FACULTATIVE	FAC	A plant species that sometimes (33-67% of the time) occurs in wetlands, but which may also be found commonly in uplands.
FACULTATIVE UPLAND	FACU	A plant species that usually occurs in uplands, but which may rarely (1-33% of the time) be found in wetlands.

Note: All plant species not qualifying in one of the above categories are UPLAND (UPL) species.

Source: D. R. Sanders, Sr., et al., Wetland Delineation Manual Parts I-IV. U.S. Army Corps of Engineers, Wetlands Research Program, Technical Report 4-84, 1984.

predominantly facultative, determination as wetland requires the presence of algal mats or wet soils at the time of sampling. Standing water, which may have been more extensive at mid-winter, had evaporated, percolated, or been drained by the time field surveys were conducted. Using algal mats as evidence of standing water minimized or eliminated speculation concerning a pond's landward edge.

It should be noted that not all parcels in the 511 Area were surveyed. Access was denied to large acreages in the southern portion (Patterson parcel). Vegetation types were undetermined in these areas except where species composition was obvious from a distance.

Field surveys reveal approximately 654 acres of wetland and 252 acres of upland (crop land, upland pasture, hayfields, and fill) in the 511 Area. These figures account for 73 and 27 percent of the total 511 area, respectively. Vegetation types are shown in Figure 1. Two units of wetland occur in the north and south ends of the 511 Area. They are separated by upland in the central 511 Area. Wetland is found in the western, or bayward portion of the 511 Area and upland occurs landward, or in the eastern portion.

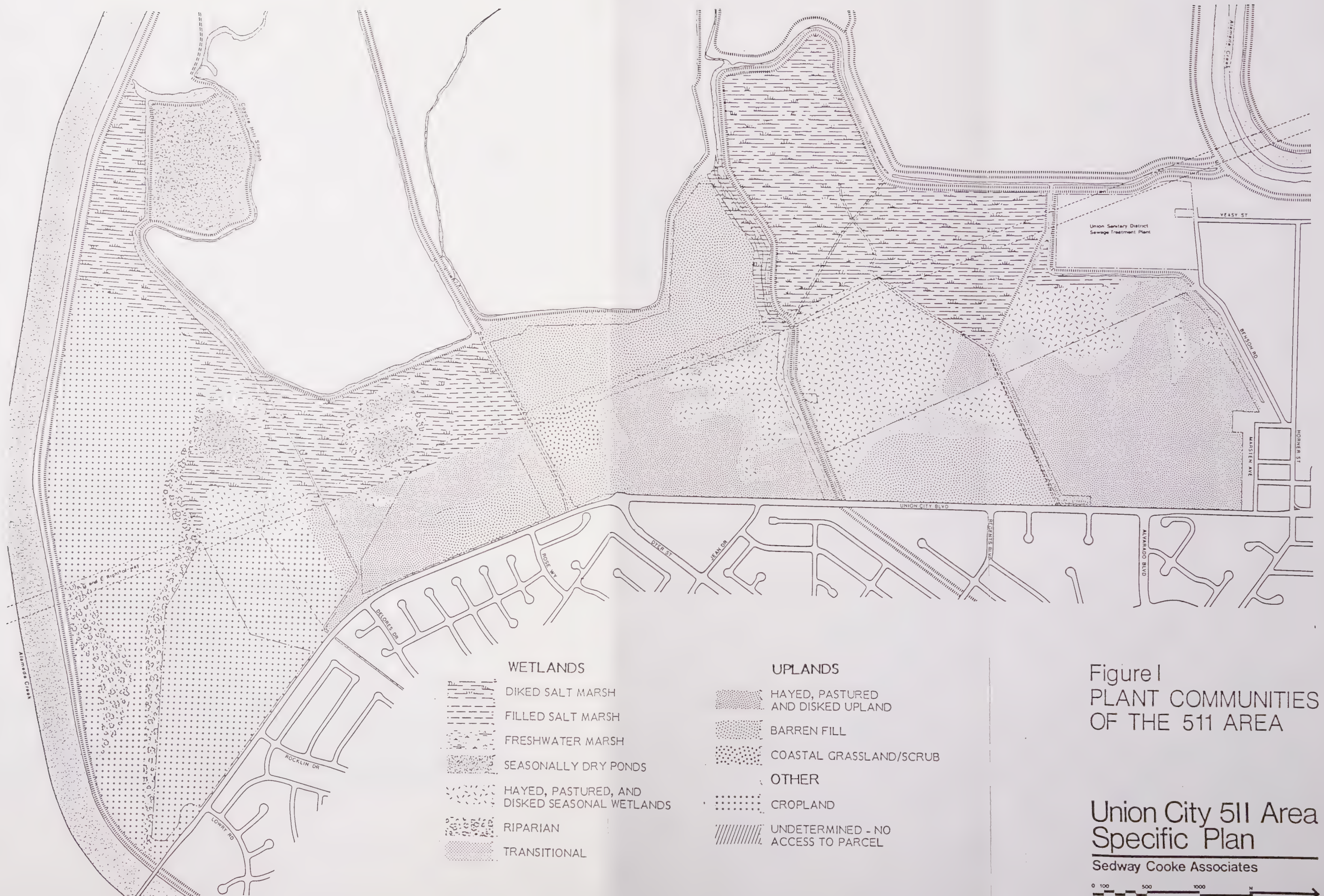
Wetlands. Diked salt marsh, freshwater marsh, seasonally dry ponds, riparian marsh, grazed, hayed, and disced wetlands occur in the 511 Area. The type of wetland depends on current land use and management, such as haying or operating freshwater ponds for duck hunters. The whole 511 Area has been diked, cutting off the enclosed marsh from the influence of bay waters. Therefore, diked salt marsh which is functionally unconnected from the estuarine ecosystem of the bay is considered distinct from tidal marsh.

Diked Salt Marsh. The diked salt marsh occurs in the westernmost portions of wetlands in the 511 Area. Much of it is within the historic margins of San Francisco Bay marshland. The original species composition of this plant community has been altered to varying degrees by diking and disturbance. Species diversity is low compared to tidal marsh, but many of the plants in the diked marsh show vigor. This community is dominated by pickleweed with alkali heath, saltgrass, and fat hen also present. These species are obligate and facultative wetland plants.

Variants of this plant community occur where saline soil conditions have become brackish due to seasonally ponded fresh water. Some sites support poison hemlock and perennial pepper grass which form a canopy over pickleweed and saltgrass. Where slight increases in elevation cause a gradual transition from a wetland to an upland environment, a zone of transitional wetland vegetation is formed. Rabbit's foot grass, saltgrass, and Italian ryegrass become more abundant in this zone. Some previously barren pond bottoms, which are subjected to grazing, include additional species such as brass buttons, sand spurry, crab grass, and Mediterranean barley.

Recently, approximately 8.5 acres of diked salt marsh in the 511 Area were illegally filled. It is currently under orders by COE to be restored as wetland. Since the fill is to be removed and the marsh restored, this area is actually considered as wetland due to its impending restoration.

Because native salt marsh species are abundant in this plant community, it is the easiest type to restore as a tidal marsh, if subsidence has not lowered the surface too much. It is botanically similar to, and can potentially resume the ecological functions of, a tidal salt marsh if restored to tidal action. Diked salt marsh is considered



to be an important biotic remnant of the salt marsh community which was once much more extensive around San Francisco Bay.

Freshwater Marsh. This plant community occurs to a limited extent within the wetlands of the southern SII Area. Small pockets of marsh occur elsewhere where conditions permit. The seasonal supply of fresh water provides conditions for a group of obligate and facultative wetland species not found in the diked salt marsh. Spiked rush, swamp smartweed, loosestrife, big trefoil, curly dock, and rabbit's foot grass dominate the site. Cattails occur sporadically. Facultative species, such as Italian ryegrass, cocklebur, and poison hemlock become frequent around the marsh's perimeter. The extent of highly productive freshwater marsh is very limited around San Francisco Bay. It adds to the diversity of plant communities and plant species found in the SII Area.

Seasonal Ponds. Seasonally dry freshwater ponds (or duck ponds) were created by diking for waterfowl management. During the summer, evaporation or pumping causes the water to recede completely, exposing a pond bottom of dried mud and annual plants. Vernal pools are naturally occurring habitats which pond water in surface depressions during winter, drying out as spring progresses. They host many rare or endangered annual plants adapted to the extreme fluctuations of their environment. The duck ponds in the SII Area provide similar habitat for annual plants which survive through prolonged inundation as seeds. The occurrence of annual plants such as prickly grass and flat-faced downingia in the SII Area is limited to pond bottoms. These species are joined by scattered individuals of cocklebur, alkali mallow, big trefoil, and curly dock. The duck pond community adds to the diversity of the SII Area. The ponds also provide habitat for vernal pool species, many of which are native to California.

Seasonal Wetlands. Hayed and grazed seasonal wetlands are extensive in the SII Area. These communities are managed wetlands which were previously either diked salt marsh, freshwater ponds, or transitional wetlands. These wetlands are currently subjected to mowing, grazing, and discing, which favors introduced species that have been seeded or have become naturally established. However, scattered clumps and individuals of native wetland species also occur. Discing and mowing reduce this plant community to stubble or bare ground seasonally; therefore, evidence of algal mats is often necessary to delineate the boundary of this wetland.

Facultative species such as Italian ryegrass, alkali mallow, big trefoil, and Mediterranean barley are common. Facultative wetland species such as perennial pepperweed, fat hen, salt grass, curly dock, sickle grass, rabbit's foot grass, alkali weed, tall wheat grass, alkali heath, and sand spurry are also common. Brass buttons and curly dock dominate old pond bottoms. Flat faced downingia, an obligate species, is limited to old pond bottoms. Other obligates such as pickleweed, seaside heliotrope, and hyssop loosestrife occur occasionally.

Transitional Wetland. Transitional wetland represents the change in plant species composition from typical wetland species to upland species. This zone reflects a gradual change from wetland to upland; therefore, plants from both upland and wetland habitats co-exist. The transitional zone is typically dominated by Italian ryegrass, but curly dock, perennial peppergrass, and wild beet are also present. The obligate hydrophyte, seaside heliotrope, occur in several areas. Pickleweed sprouting from disced root stalks occurs sporadically within the transitional zone. Scattered individuals and clumps of native wetland species suggest the transitional zone could

potentially be restored to vegetation found in marginal to high salt marsh. Undisturbed transitional wetland is extremely rare around San Francisco Bay. If allowed to reestablish natural vegetation, transitional wetland could potentially be a suitable habitat for, and expand the limited range of, the rare Point Reyes bird's-beak and Jepson's pea.

Riparian Woodland. This vegetation type is limited to the southern half of the 511 Area, with most of it occurring as corridors along freshwater streams. Scattered riparian pockets also occur around the margins of freshwater marshes and ponds. The groves of large deciduous trees form a green wall of vegetation rising above surrounding agriculture and low marsh plants. Besides adding to the structural diversity of plant forms in the 511 Area, the distinct community of riparian species increases the biotic diversity. Cottonwoods, willows, gooseberry, blackberry, salmonberry, twinberry, and ferns are native plants limited to this community in the 511 Area. In a regional context, riparian marsh is an important resource because this community has become extremely limited in close proximity to the bay.

Uplands. Uplands occur in the central and eastern portions of the 511 Area. Some of these areas, such as the Turk Island Sanitary Landfill, have little current biotic value, but have potential as a valuable biotic resource depending on land management in future plans. An area of barren fill on the Beretta parcel is being readied for construction. The potential biotic value of these sites depends on the type and amount of landscaping when converted to urban uses.

Upland pasture is limited in the 511 Area. Upland hayfield occurs mainly in the northern half, but some is also present to the south. Hayfield areas are dominated by upland grasses such as wild oats and rip-gut brome. Italian ryegrass, a facultative species, is also common but not dominant. Other plant species include bindweed, wild radish, wild mustard, star thistle, bullthistle, sow thistle, and bristly oxtongue. Facultative and facultative wetland species (defined in Table 1) were frequent, but not dominant. A variant of this community occurs on abandoned landfill which has been naturally recolonized by upland species. This site had the character of a coastal shrub community because coyote bush was abundant. Upland hayfield and pasture add to the biotic diversity of the 511 Area by supporting species adapted to drier soils. This community also adds to the biotic diversity of the bay.

Other Lands. Cropland is limited to the southern half of the 511 Area. Soils there are suitable for cultivation of row crops such as lettuce. The intensive management of these areas has reduced other forms of vegetation to a minimum. Although some area is within the margin of historic bayland, croplands do not qualify as wetlands under COE wetland criteria.

Access to the Patterson parcel was denied to WESCO personnel, so vegetation types were undetermined. No conclusion can be made regarding vegetation types on these lands until field surveys using a similar methodology have been conducted.

Rare and Endangered Plants. The 511 Area possesses potential habitat for two rare plants known to occur in the south San Francisco Bay vicinity. Point Reyes bird's-beak (Cordylanthus maritimus spp. palustris) is an annual herb found growing in the high salt marsh. However, this species is reported to be extinct in the south San Francisco Bay Area for unknown reasons. The hairless popcorn flower (Plagiobothrys glaber) is also an annual herb which grows in salt marsh and alkaline flats. Both species are candidates for federal listing as endangered species.

Neither Point Reyes bird's-beak nor the hairless popcorn flower were observed during the wetlands survey. However, the sampling effort needed to determine their presence would require greater intensity than that shown for the wetland delineation. Because of its reported disappearance from bay salt marshes, it is very unlikely that Point Reyes bird's-beak would occur in the 511 Area. However, the hairless popcorn flower is more common and widely distributed, making its occurrence more of a possibility.

Wildlife

Methodology. Wildlife resource studies involved review of existing information for the 511 Area and adjacent lands, and field studies which were primarily directed at defining the extent of habitat for rare, threatened, or endangered species. Principal references included studies conducted for Ponderosa Homes¹ and letters from the FWS to the City and County² concerning endangered species and wetlands within the 511 Area. Additional references are listed at the end of this appendix.

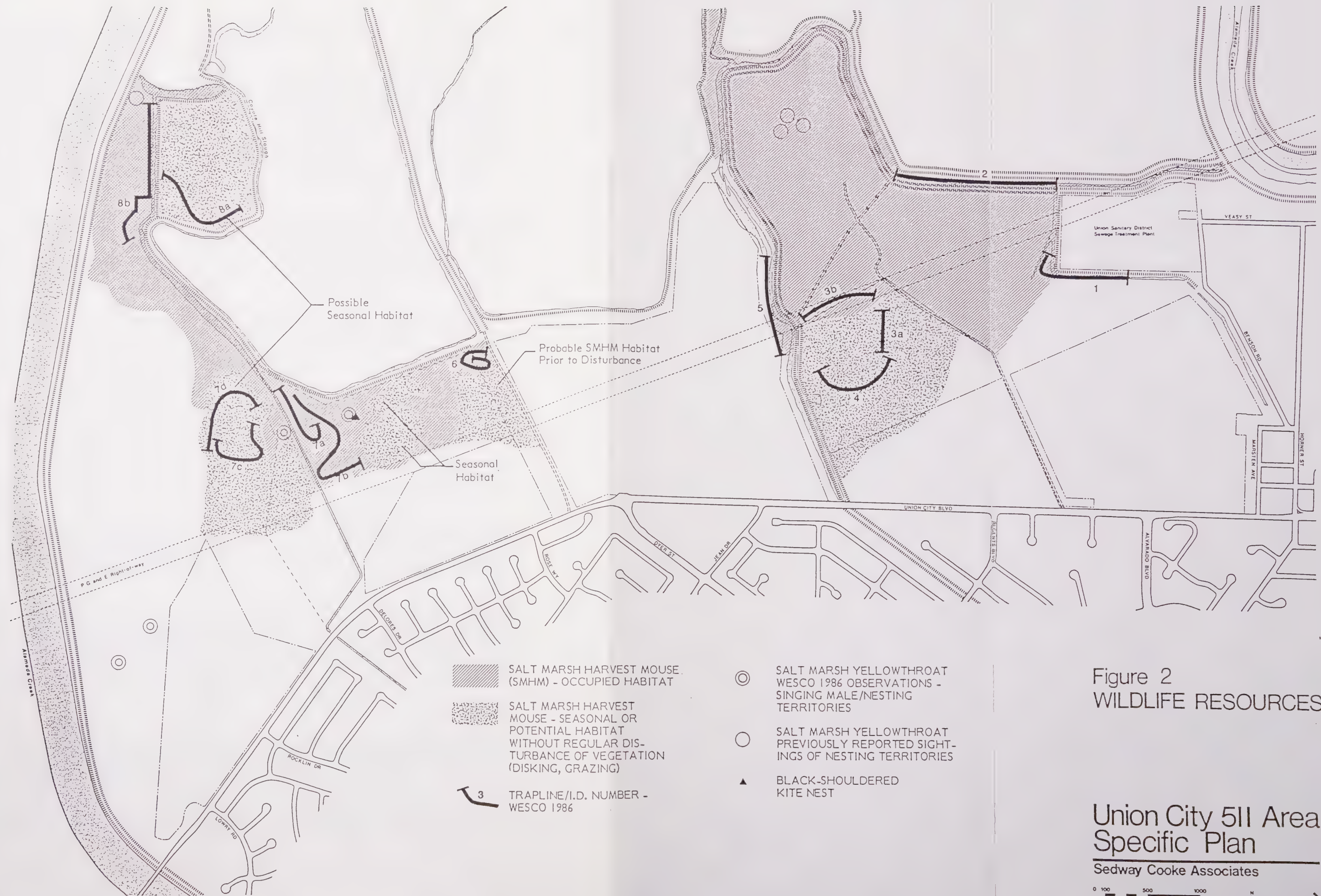
The primary aspect of the field studies was a live-trapping program to determine the presence or absence of the endangered salt marsh harvest mouse (Reithrodontomys raviventris raviventris). This species has been previously documented in portions of the 511 Area.³ Because similar potentially suitable habitats occur in other parcels and areas, additional studies were deemed necessary to adequately evaluate the potential impacts of the specific plan on this species.

The trapping studies were conducted between June 9 and 20, 1986, by WESCO, ecological consultants. Eight primary areas were selected for trapping in cooperation with the California Department of Fish and Game (CDFG). The locations of the traplines are shown in Figure 2. Standard (3 x 3 x 9 inch) Sherman live-traps were placed at 30- to 40-foot intervals along each trapline through representative vegetative cover in each area. One to two traps were placed at each station depending on the size of the area, variability and diversity of plant species, and the number of traps available on a given day. Since the primary emphasis was in determining presence or absence, the traps were removed once a sufficient number of mice were captured to assess their distribution in each area. The traps were baited with a

¹Harvey & Stanley Associates, Union City Area Monster Site Salt Marsh Harvest Mouse Trapping Survey, 1985.

²G. C. Kobetich, Records of Endangered Species on lands owned by Alameda County (Case No. 1-1-86-TA-281), letter to H. A. Flertzheim, Jr., Director of Public Works, and P. E. Lanferman, Engineer-Manager, Alameda County Flood Control District, USDI Fish and Wildlife Service, Sacramento Endangered Species Office, 1986; J. J. McKevitt, letter to Mr. Tom Kitayama, Mayor, City of Union City, regarding scoping information for the 511 Area. USDI Fish and Wildlife Service, Division of Ecological Services, Sacramento, 1986; J. J. McKevitt, letter to Mr. Jon Holan, Associate Planner, City of Union City, concerning 511 Area wetlands. U.S. Fish and Wildlife Service, Division of Ecological Services, 1985.

³Harvey & Stanley Associates, 1985, op. cit.; Kobetich, 1986, op. cit.



mixture of rolled oats, wild bird seed, and chopped walnut meats. Synthetic batting was also placed in each trap for nesting material (to provide warmth).

Special care was taken to identify each harvest mouse captured in the 511 Area since both the endangered salt marsh harvest mouse and the widespread and common western harvest mouse (Reithrodontomys megalotis) can be expected to co-occur in the region. Standard diagnostic criteria based on a composite rating of four tail characteristics¹ were used for species identification. Other physical characteristics were also recorded and used as aids in species identification. These included belly coloration;² length and ratio of tail, head, and body; general behavior (active or docile); and the presence or absence of orange tufts of hair in front of the ears.

All harvest mice were individually marked, or other distinguishable characteristics were recorded to facilitate recognition of recaptured animals. Other recorded data include age (adult or juvenile), sex, relative plant species composition and ground cover, and location (plotted on 1" = 200' or 1" = 500' aerial photo base maps) at each capture site. General data, such as other wildlife species observed or captured and weather conditions, were also recorded.

In addition to the trapping studies, other areas with potential habitat or previously recorded sightings of sensitive, rare, threatened, or endangered species were searched. Any observations of the species or their signs were recorded in field notebooks and plotted on the aerial photo base maps.

Seven basic wildlife habitats have been delineated within the 511 Area. These include diked salt marsh, riparian, freshwater ponds (duck ponds), hayed and grazed seasonal wetlands, uplands (primarily pastureland), barren fill/industrial, and agricultural row crops. The first four types fall within the broad category of wetlands and, as such, are of biological concern to various local, state, and federal agencies and environmental organizations. Descriptions of the characteristic plants and distribution within the 511 Area of all the habitats are presented in the preceding section on vegetation.

Wildlife resources of primary concern in relation to the specific plan are principally associated with the four wetland habitat types and include species in the general categories of water birds (ducks, geese, herons, egrets, shorebirds, etc.), species of special concern to the CDFG, and listed or candidate threatened or endangered species.

Water Birds. The San Francisco Bay region is a major wintering area and migratory stop-over for millions of migratory water birds. Large numbers of water birds also nest and rear young in this region. Wetlands around the bay, including natural tidal marshlands and mudflats, as well as the seasonally wet habitats on the undeveloped margins of the bay, provide the critically important feeding and resting habitat for these birds.

¹H. S. Shellhammer, Identification of Salt Marsh Harvest mice, Reithrodontomys raviventris, in the Field and with Cranial Characteristics, California Fish and Game, Vol. 70(2):113-120. California Department of Fish and Game, 1984.

²After G. F. Fisler, Adaptations and Speciation in Harvest Mice of the Marshes of San Francisco Bay. University of California, Publ. in Zoology 77:1-108, 1965.

Water bird populations in the Bay Area, and hence the 511 Area, are generally highest in the early winter (November-December), which corresponds with the peak migratory period. Population levels typically remain fairly high through the winter and early spring and show a gradual decline to low summer levels. By the end of July, water bird numbers increase again with the arrival of early migrant shorebirds such as the Wilson's phalarope (Phalaropus tricolor).

Water bird use of the 511 Area is highly dependent on a number of natural and man-induced conditions including rainfall, tidal conditions, human activity, agricultural uses/practices, and general weather patterns. Open water, whether in natural depressions or in intentionally flooded duck ponds, is the major attractant for the water birds. In dry years use is low, whereas a considerable number and diversity of birds can be expected in wet years when larger areas have standing water. This variation can be seen in the summaries of water bird counts for three sites in the 511 Area (see Table 2). This data, collected by personnel from the San Francisco Bay National Wildlife Refuge (NWR), shows a range from zero at one site in April 1984 to over 7,200 water birds at another site in December 1984.

TABLE 2: SUMMARY OF WATER BIRD CENSUS DATA AT THREE SITES IN THE 511 AREA DURING 1983-1984

Census Site No.	Location/Habitat	Date/Number of Water Birds			
		12/28/83	2/23/84	4/13/84	12/11/84
A13	AFCD Land/Duck Pond	294	45	0	650
A14	AFCD Land/Duck Ponds	43	527	341	155
A15	AFCD Land/Diked Salt Marsh	130	185	66	7244

Source: U.S. Fish and Wildlife Service, Aerial Census Data, San Francisco Bay National Wildlife Refuge.

All three count areas are on Alameda Flood Control District (AFCD) lands. Areas A13 and A14 are duck ponds which are seasonally for waterfowl hunting. Count area A15, the diked salt marsh basins, and seasonal wetlands are in the northern portion of the 511 Area (see Figure 2).

Species of Special Concern. The species of special concern list was developed by the CDFG to help land management agencies, development interests, landowners, and the general public take action to protect species with declining or vulnerable populations before they become endangered. This "watch list" is intended primarily as a management tool and does not carry any mandated protective status. The CDFG, however, strongly considers impacts to these species when evaluating project proposals.

There are seven bird species on the special concern list¹ and one state fully protected species which inhabit or could be expected to occur regularly in the 511 Area and warrant consideration. These include:

Double crested cormorant	(<u>Phalacrocorax auritus</u>)
Snowy plover	(<u>Charadrius alexandris</u>)
Northern harrier	(<u>Circus cyaneus</u>)
Burrowing owl	(<u>Athene cunicularia</u>)
Short-eared owl	(<u>Asio flammeus</u>)
Black-shouldered (white-tailed) kite	(<u>Elanus caeruleus</u>)
Yellow warbler	(<u>Dendroica petechia</u>)
Yellow-breasted chat	(<u>Piranga rubra</u>)

In addition to these eight species, there are several migrants which winter in and around Bay Area marshlands and could be expected to use the 511 Area. Their use of the area, however, would be sporadic and not of significant concern for the species' long-term population status. Species in this category include common loon (Gavia immer), white pelican (Pelecanus erythrorhynchos), purple martin (Progne subis), Barrow's goldeneye (Bucephala islandica), sharp-shinned hawk (Accipiter striatus), Cooper's hawk (Accipiter cooperii), golden eagle (Aquila chrysaetos), and prairie falcon (Falco mexicanus).

The double-crested cormorant is a common resident in the Bay Area and nests in colonies or rookeries. No rookeries are located in or adjacent to the 511 Area. However, this bird is probably a fairly common fly-over species for the area's wetlands and may forage in duck ponds if small fish (its primary food source) are present. The snowy plover is also associated with open water, but prefers areas with little or no vegetation and is known to nest and winter on salt ponds adjacent to the project area. The snowy plover is a candidate Category 2 species for possible federal listing and its status/occurrence in the area is discussed in more detail in the next section.

The four raptors (hawks and owls) inhabit grasslands (including pasture and hayfields) and wetlands. The northern harrier (or marsh hawk, as it was formerly called) is present in the area. Several were observed foraging in the wetland and pastureland habitats during the field studies. Although no nests were identified, this species probably does nest in the 511 Area. Northern harriers place their nests on the ground and usually in dense brushy or weedy cover. Suitable nesting habitat occurs primarily in the diked salt marsh and shrubby riparian habitats. The edges of the larger seasonally wet or even upland pasturelands could also provide suitable nesting habitat if these areas are not hayed or heavily grazed.

¹ J. V. Remson, The Species of Special Concern List: An Annotated List of Declining or Vulnerable Species in California. California Department of Fish and Game, Non-game Wildlife Investigations, Report No. 78-1, 1978.

The black-shouldered kite, a state fully protected species, is also present in the 511 Area, and one nest site was identified. The nest is in a small stand of trees on AFCD lands in the southern half of the project area (see Figure 2). Black-shouldered kites are fairly common inhabitants in grasslands and marshland habitats in the region.

The burrowing owl and short-eared owl were not identified in the area, although suitable habitat for burrowing owls is present and this species is known to occur in the region within a few miles of the 511 Area. Pastureland and drier portions of the seasonal and diked salt marsh wetlands (usually on bordering dikes) are their principal habitats. The habitat requirements of the short-eared owl are very similar to the northern harrier. The short-eared owl is also a ground nester in grassland and marshland. This species has been greatly reduced in numbers, and is known to nest in only two or three locations in the Bay Area. It is unlikely that this species occurs in the 511 Area on more than an irregular basis as a winter migrant.

The yellow warbler and yellow-breasted chat almost exclusively inhabit riparian habitats. Historically, both species were known to occur and were even considered common along streams in Alameda County;¹ however, they are now uncommon. Neither species was observed in the riparian habitats in the 511 Area. Principal causes cited for their declining populations is nest parasitism by cowbirds (Molothrus ater) and loss of habitat.

Threatened and Endangered Species. The San Francisco Bay Area and the region's marshlands in particular are inhabited by a large number of rare, threatened, and endangered species. In the 511 Area there are five species listed by the state and/or federal government as endangered or threatened, and four species which are federal candidates are currently under study for listing. These species and their statuses are listed in Table 3.

The bald eagle and peregrine falcon are wide-ranging species and can generally be expected almost anywhere in the state. Both are winter migrants to the Bay Area and one peregrine falcon has been observed in the 511 Area.² Of the remaining species, the salt marsh harvest mouse is the primary species of concern.

Salt Marsh Harvest Mouse. The salt marsh harvest mouse is a Bay Area endemic species. It only occurs in the marshlands of San Francisco, San Pablo, and Suisun bays. Its historic habitat (salt and brackish marshes) has been reduced by an estimated 90 percent since the late 1850's, and this is the principal reason for the species' endangered status. Pickleweed-dominated salt marsh (tidal and diked) is its primary habitat, although this species has also been found in upland grassland

¹ J. Grinnell and M. W. Wythe, Directory to the Bird-Life of the San Francisco Bay Region. Cooper Ornithological Union, Pacific Coast Avifauna No. 13, Berkeley, 1927.

² Paul Kelley, California Department of Fish and Game, Region III, Yountville, personal communication.

TABLE 3: THREATENED AND ENDANGERED SPECIES

State and Federal Endangered

Salt marsh harvest mouse	(<u>Reithrodontomys raviventris raviventris</u>)
California clapper rail	(<u>Rallus longirostris</u>)
Peregrine falcon	(<u>Falco peregrinus anatum</u>)
Bald eagle	(<u>Haliaeetus luecocephalus</u>)

State Threatened/Federal Candidate

California black rail	(<u>Laterallus jamaicensis cortinicus</u>)
-----------------------	--

Federal Candidates

Salt marsh wandering shrew	(<u>Sorex vagrans halicoetes</u>)
Western snowy plover	(<u>Charadrius alexandrius nivosus</u>)
Salt marsh yellowthroat	(<u>Geothlypis trichas sinuosa</u>)
Long-billed curlew	(<u>Numenius americanus</u>)

habitats adjacent to marshes and in other wetland communities with little or no pickleweed.¹

Prior to WESCO's 511 Area studies, the salt marsh harvest mouse was known to occupy two sites in the 511 Area. The largest site is in the diked salt marsh habitats north of the Turk Island Landfill, as well as on and adjacent to the proposed Ponderosa Homes developments on the Munster and Bacon-Bettencourt parcels. Salt marshes were first identified in the Munster site area during late May 1985. Thirty-four mice were captured by Harvey & Stanley Associates² during trapping studies for Ponderosa Homes. Additional trapping in July 1985 identified additional occupied habitat in the adjacent salt marsh basin southwest of the Munster site.³ Although the acreage and total extent of habitat occupied by this species was not presented in the Harvey & Stanley Associates report, pickleweed-dominated marsh habitat covered approximately 112 acres and is mostly on AFCD lands. Based on descriptions and maps in the report, salt marsh harvest mice were captured up to sites slightly

¹F. D. Botti and D. Becker, Utilization by Salt Marsh Harvest Mice, Reithrodontomys raviventris halicoetes, of a Non-Pickleweed Marsh, California Fish and Game, Vol. 72 (1):62. California Department of Fish and Game, Sacramento, 1986; WESCO, Status Survey for the San Pablo Vole (Microtus Californicus sanpabloensis), Final Report. USDI Fish and Wildlife Service, Sacramento Endangered Species Office, 1986; Fisler, op. cit., 1965.

²Harvey & Stanley Associates, 1985, op. cit.

³Kobetich, op. cit., 1986.

east of the Pacific Gas and Electric Company transmission lines. No trapping was conducted in adjacent seasonal wetland or upland habitats on the Munster parcel. The second area was in diked salt marsh habitat on the AFCD property in the southwestern corner of the 511 Area. Eleven salt marsh harvest mice have been captured in this area between 1983 and 1985.¹ Occupied habitat identified during this effort covered approximately 16 acres.

During WESCO's trapping studies conducted for the 511 Area Specific Plan, 17 salt marsh harvest mice in six additional sites were captured. The results of these studies (see Table 4) show that salt marsh harvest mice occupy essentially all diked salt marsh habitat within the 511 Area. They may also seasonally inhabit several of the duck ponds or seasonal freshwater ponds in the study area. Salt marsh harvest mice would at least re-occupy the duck ponds if the ponds were abandoned. One salt marsh harvest mouse was captured in an area that appeared to be an abandoned duck club pond which had been invaded by a dense cover of dock and pickleweed (trap line 7A).

Based on the results of these and past studies, habitat occupied by the salt marsh harvest mouse as of June 20, 1986 covers approximately 210 acres of diked salt marsh habitat in the 511 Area. Another 6 to 31 acres of duck ponds could also seasonally be inhabited by the species (see Figure 2). Another 10 acres of known or probable habitat, however, has been eliminated within the last year. About 2 acres of habitat on or bordering the Munster parcel have been disced and the pickleweed-dominated marsh cover eliminated. Six salt marsh harvest mice were captured in this area in 1985 by Harvey and Stanley Associates. Some of this discing occurred in June 1986 during the 511 Area field studies. Pickleweed-dominated marsh was present up to and slightly east of the transmission lines, but is now present up to 100 to 150 feet west of the lines.

Another 8.5 acres of diked salt marsh habitat on the Beretta parcel was disced and illegally filled in 1985. A cease and desist order was issued by the COE for this site and a marsh re-establishment plan was ordered. Although salt marsh harvest mice had not been documented on this site, the disced area abuts and apparently supported similar vegetation to a site where six salt marsh harvest mice were captured in June 1986 (trapline No. 6, Figure 2 and Table 4).

The salt marsh harvest mouse has long been considered to be primarily associated with pickleweed-dominated wetlands (salt marshes); other types of adjacent wetlands and uplands had largely been ignored in studies related to this species. Several trapping studies over the last several years, however, have documented salt marsh harvest mice (occasionally in substantial numbers) in what traditionally would have been considered unsuitable habitats. These studies² found salt marsh harvest mice in wetlands which either lacked pickleweed or contained only a very sparse cover. Even

¹Ibid.

²Bottie, et al., 1986, op. cit.; WESCO, 1986, op. cit.; WESCO, Biological Resources of the Pittsburg 8 and 9 Study Area, unpublished report prepared for Pacific Gas and Electric Company, Department of Engineering and Research, San Ramon, California, 1981.

TABLE 4: RESULTS OF WESCO LIVE-TRAPPING STUDIES CONDUCTED IN THE 511 AREA, UNION CITY, CALIFORNIA, JUNE 1986

Trapline*	Date Set	Date Removed	Species Captured				Total Trap-nights
			salt marsh harvest mouse: <i>Reithrodontomys raviventris</i>	California vole: <i>Microtus californicus</i>	house mouse: <i>Mus musculus</i>	deer mouse: <i>Peromyscus</i>	
1	6/9/86	6/17/86	2	2	0	0	50
2	6/9/86	6/13/86	3	13	13	1	160
3A	6/9/86	6/13/86	0	0	3	4	100
3B	6/9/86	6/13/86	1	5	4	0	100
4	6/9/86	6/11/86	0	0	0	0	50
5	6/9/86	6/13/86	2	10	3	0	100
6	6/11/86	6/13/86	6	5	0	0	60
7A	6/17/86	6/20/86	1	7	0	0	75
7B	6/17/86	6/20/86	1	1	0	0	75
7C	6/18/86	6/20/86	0	0	3	0	50
7D	6/18/86	6/20/86	0	0	2	0	50
8A	6/17/86	6/20/86	0	0	0	0	75
8B	6/17/86	6/20/86	0	0	1	0	75
Totals			17	43	29	5	1,020

*See Figure 2 for trapline locations.

less is known about the use of uplands adjacent to salt marsh harvest mouse habitat. Fisler,¹ in his definitive monograph on the species, reported capturing individuals in grasslands up to about 150 feet from salt marshes. Other salt marsh harvest mice have also been captured in ruderal upland or grassland habitats, but these captures have also been within 150 feet of occupied salt marsh habitat.²

Although the data is limited, there have been enough salt marsh harvest mice captured in these peripheral or atypical habitats to warrant consideration. The vegetation covering the Munster parcel seasonal wetlands falls in this category. The current cover is predominantly herbaceous and composed of plants such as spiked rush, curly dock, rabbit's foot grass, and ryegrass. In May 1986, the wetland area supported a dense and lush cover of vegetation. Since salt marsh harvest mice had been captured adjacent to this seasonal wetland in 1985, and this cover type was not included in the trapping by Harvey & Stanley Associates, it was decided to trap the seasonal wetland as well as adjacent to pickleweed habitat (for a control) in order to better assess use of this habitat type and potential impacts of the specific plan. Unfortunately, by the time of WESCO's trapping studies in June, the herbaceous cover had recently been mowed for hay. Traps were set in this area but had to be removed after the second night in the mowed area because of bailing and discing operations; as a result, no mice of any species were captured in this area (see Table 4).

California Clapper Rail. The California clapper rail is known to almost exclusively inhabit tidal salt marsh habitats and prefers the bayward edges of the marsh and the edges of tidal sloughs. This species' dependence on tidal marshes is believed to result from the greater productivity of invertebrates, the clapper rail's preferred food, in tidal areas. There are no recent records of clapper rails in the 511 Area, and no suitable tidal habitat is present.

California Black Rail. The California black rail, similar to the clapper rail, is typically found only in tidal marshes in the Bay Area. In other portions of its range it inhabits wet meadows and freshwater marshes.³ Although the black rail has an apparent similar dependence on tidal marshes, the black rail is a bird of the mid to high (landward) marsh zones which are rarely inundated by tides.

Salt Marsh Wandering Shrew. The salt marsh wandering shrew occupies the same basic habitats as the salt marsh harvest mouse and clapper rail. It was historically found throughout most of the tidal salt marshes of San Francisco Bay from San Pablo south to Alviso and north to San Francisco. It is currently limited in its distribution, with only four individual marshes within its historic range considered as currently

¹Fisler, 1965, op. cit.

²WESCO, 1986, op. cit.; WESCO, 1981, op. cit.

³S. R. Wilbur, The Literature of the California Black Rail. USDI Fish and Wildlife Service, Special Scientific Report, Wildlife No. 179, Washington, D.C., 1974; R.L. Todd, Black rail, little black rail, black cake, Farallon rail (*Laterallus jamaicensis*). In management of migratory shore and upland game birds in North America. Edited by G.C. Sanderson, University of Nebraska Press, Lincoln and London, 1977.

(observations or captures within the last 5 years) supporting populations of this species.¹ All are natural tidal marshes. Fifteen additional marshes have been identified as likely supporting salt marsh wandering shrew populations.²

One of the extant populations inhabits the tidal marshes north and west of Turk Island, about 1 mile west of the SII Area.³ One shrew, which was not identified to species or subspecies level, was also captured by Harvey and Stanley Associates (1985) during their studies in the Munster site area. The extent of the potential habitat for this candidate species is essentially the same as that for the salt marsh harvest mouse.

Western Snowy Plover. The western snowy plover prefers the dry sand and upper sand flats of open beaches backed by sand dunes and bordered by marsh or brackish lagoons.⁴ Nesting is typically solitary and occurs in areas with a flat sand and shell mix with no vegetative cover and a good supply of food sources such as amphipods, brine flies, and other insects.

Historically, the birds commonly nested along the coastal dunes and beaches from Mexico to Washington. Most of the prime nesting habitat in low dunes is now subject to considerable human disturbance and populations have dwindled.⁵ The snowy plovers, however, have partially compensated for this loss by shifting their breeding activities to include nesting on salt pond dikes, barren flats, or sand fills.

Although no suitable breeding habitat exists within the SII Area, several nests have been reported on adjacent salt ponds.⁶ One adult snowy plover was observed on salt flats in the salt pond in the southwestern portion of the study area, but no nests or young were observed during this study.

Salt Marsh Yellowthroat. The salt marsh yellowthroat breeds only in fresh and brackish water marshes and riparian habitats surrounding San Francisco Bay east to

¹WESCO, A Review of the Population Status of the Salt Marsh Wandering Shrew (*Sorex Vagrans halicoetes*), Final Report. USDI Fish and Wildlife Service, Sacramento Endangered Species Office, 1986.

²Ibid.

³Ibid.

⁴A. C. Bent, Life Histories of North American Shorebirds, Part Two. Dover Publications, New York, 1927.

⁵Remson, 1977, op. cit.

⁶G. W. Page and L. E. Stenzel, editors, The Breeding Status of the Snowy Plover in California, California Department of Fish and Game, Nongame Wildlife Investigations, Sacramento, 1979.

Carquinez Strait and along the Pacific Coast from Tomales Bay to Pescadero Marsh.¹ A recent survey of this species for the FWS² identified two locations supporting four breeding pairs in the 511 Area. Six additional singing males were identified in the 511 Area during this study. The locations of these observations are shown in Figure 2. Five of the six yellowthroats identified during this study were in willow riparian habitats and one was along a weedy dike bordering a drainage channel and diked salt marsh habitat.

Long-Billed Curlew. The long-billed curlew is a winter migrant to the San Francisco Bay Area. It nests in grassland and marshes throughout the Great Basin and Great Plains. It is listed as an uncommon to fairly common migrant in the Bay Area with a few nonbreeding individuals resident through the summer.³ This species can be expected to occur regularly in the 511 Area and would use essentially all habitat types except riparian (including uplands and agricultural row crops). Most feeding activity, however, would be within the seasonal wetlands and diked salt marsh habitats.

Impact Assessment

Introduction. One of the major goals in formulating the 511 Area Specific Plan was to avoid major impacts to wetlands and endangered species habitat. The guidance for the protection and/or the complete mitigation of impacts to these habitats lies within a number of state and federal laws and policies. These include: state and federal Endangered Species Acts; the Fish and Wildlife Service (FWS) Mitigation Policy and Wetlands Policy; Executive Order 11990, Protection of Wetlands; Federal Clean Water Act; California Department of Fish and Game (CDFG) wetlands policy (draft); and State Senate Concurrent Resolution No. 28. These laws and policy statements recognize the inherent high values of wetlands and/or endangered species habitats which, in the Bay Area, are often synonymous. These laws and policies, whether or not they carry a legal mandate, advocate the preservation of the habitats, or equal or greater compensation when impacted by developments or other actions. In recognition of these laws and policies, the Specific Plan proposes that most of the wetlands and endangered species habitat in the 511 Area be designated for open space. Some isolated pockets of seasonal wetland and the margins of some transitional wetland would be impacted by development on the Ponderosa, Beretta, and Turk Island Company parcels; but, if left intact, most of these wetlands would be difficult to manage or buffer when surrounded by development. By mitigating the loss of these isolated wetlands by creating new wetland habitat on an acre-for-acre

¹Margaret Foster, Status of the Salt Marsh yellowthroat (*Geothlypis trichas sinuosis*) in the San Francisco Bay Area, California, 1975-1977. Project W-S4-R-9, "Nongame Wildlife Investigations, California Department of Fish and Game File Report, Job Final Report, I-1.13, March 1977.

²K. Hobson, P. Perrine, E. B. Roberts, M. L. Foster, and P. Woodin, A Breeding Season Survey of the Salt Marsh Yellowthroats (*Geothlypis trichas sinuosis*), San Francisco Bay Bird Observatory. U.S. Fish and Wildlife Service Contract N. 84-57, Sacramento, 1985.

³G. McGaskie, P. DeBenedictis, R. Erickson, and J. Morlan, Birds of Northern California: An Annotated Field List, Golden Gate Audubon Society, Berkeley, 1979.

basis, wetlands can be consolidated and managed to produce higher value. Some impacts will still occur; these are described in the following sections. Such impacts are inevitable when urban development expands into undeveloped areas; however, impacts to critical resources would be greatly reduced with the measures incorporated in the Specific Plan.

Vegetation. The proposed Plan would affect plant communities in two ways: (1) conversion of natural areas to urban areas; and (2) increasing accessibility by adding a residential population on wetland boundaries and establishing a trail system within the wetlands.

Land Conversion. Construction of residential developments would directly and indirectly impact wetland and upland vegetation by replacing natural areas with graded fill, pavement, buildings, and introduced species of landscaped plants. The following discussion addresses the impacts these features would have on the botanical resources of the 511 Area.

Wetlands. Residential development on the Ponderosa and Turk Island Landfill/Beretta parcels would result in a direct loss of 17 acres of wetlands. Most of this impacted vegetation is transitional wetland, but smaller areas of seasonal wetland would also be converted. The biotic value of these wetlands has been degraded because mowing and disking favors introduced grasses and weeds over native marsh vegetation. Compensation for the loss of these areas can be achieved by protecting or creating a similar amount of wetland habitat elsewhere in the 511 Area. Establishing broad buffer zones, protecting transitional wetlands, restoring degraded wetlands, and preserving fingers of upland (which are not regulated by wetland policies) would more than replace the botanical value of the wetlands lost to development.

Conversion of upland to urban use may result in indirect hydrologic impacts to wetlands. Presently, the water source for seasonal wetlands falls as rain which ponds in low areas. Some water is gathered as runoff from adjacent uplands. As a result of paving, construction, and landscaping in uplands, water quality in the wetlands may change. Drainage from roads and yards may carry petroleum residues, pesticides, nutrients, or other contaminants into the wetlands. These pollutants can adversely affect plant growth or favor weedy species over native species. On the other hand, if urban runoff is directed away from wetland via the municipal sewer, the wetlands would not receive any upland runoff. Less moisture could decrease the vigor of marsh plants and allow for encroachment of upland species.

Uplands. There would be a direct loss of 195 acres of upland (row crops, pasture, and hayfield). Plant species comprising these habitats are widespread and commonplace; therefore, no uplands would warrant protection because of sensitive botanical resources. However, uplands in the northern section of the 511 Area are within the 5-foot contour, an elevation below which salt marsh vegetation could be expected to recolonize naturally if tidal action were restored. Therefore, some of these uplands could serve as feasible mitigation sites (or "wetland receiver areas") in return for marshland developed elsewhere.

Accessibility. Conversion of uplands to residential neighborhoods would increase recreational use of wetlands. Newly constructed trails and paths would subject previously remote sites to impacts from foot traffic and bicycles. In addition, wetlands adjacent to developments would naturally be attractive as playgrounds.

Impacts stemming from these activities include trampling of vegetation, the proliferation and erosion of paths, and the removal (by picking) of potentially occurring rare wildflowers.

Wildlife. Significant impacts to wildlife resources from the proposed plan would be largely avoided through the adoption of wetlands and rare and endangered species habitat as undeveloped open space. Some direct and indirect impacts would occur; however, these types of impacts are unavoidable and would be of greater magnitude without the Specific Plan as it is currently proposed. Additional site-specific mitigation measures are also presented to further minimize and buffer impacts.

Urban development would occur in three basic areas and result in the conversion of 195 acres of upland habitats (pasture, hayfield, and row crops) and 17 acres of seasonal wetland habitat to residential uses or developed park/recreational facilities. While many urban-adapted wildlife species, particularly songbirds, would benefit from the changes, populations of other open land wildlife species would decrease. The types of wildlife affected by the land use conversion are, in general, common to abundant species and such impacts would not be considered significant.

The loss of the 17 acres of seasonal wetland habitat and the associated water bird values (existing or potential) would be compensated for on an acre-for-acre basis through the creation of additional wetland habitat, enhancement of existing wetland, and preservation/enhancement of key upland habitats. Buffer zones (100 feet in width) between developed areas and wetland habitats have also been incorporated into the Plan. The seasonal wetlands that would be developed are small isolated pockets that would be difficult to protect or buffer and are shown in Figure 11-4 of the General Plan Amendment. Even if development was precluded in these areas, the proximity of urban development would render them virtually useless to wildlife.

Construction activities would result in the disruption of normal wildlife activity patterns. Water bird use of designated open space wetlands may decline in the short term, but should return to existing or higher levels following full buildout. The greatest concern during construction is the potential for the indirect loss or degradation of wetland and buffer zone habitats. Approximately 12 acres of wetland habitat have been severely degraded or destroyed in the 511 Area as a result of farming or construction-related grading. This has included 2 acres of known salt marsh harvest mouse habitat in the Munster site area, 8.5 acres of diked salt marsh habitat on the Beretta parcel, and about 2 acres of riparian habitat of AFCD property in the southern portion of the 511 Area. These habitat losses have all occurred within the last year and point out the need to clearly identify or physically protect critical habitats adjacent to construction areas.

Runoff from construction sites also has the potential to severely degrade wetland habitats. Silt as well as oil and grease can significantly affect the quality of the wetlands. This is of particular concern during initial grading and filling operations at the upper edges of natural drainages into wetland basins. Such impacts can be avoided with careful construction practices and the incorporation of mitigation measures presented in the following section.

The increased proximity of residential areas to the wetlands and the development of the proposed trails and related facilities (nature center, recreation sites, parking areas, etc.) will increase the potential for marsh degradation. The soft soils and vegetation in wetlands makes them susceptible to damage from repeated trampling along established or unofficial trails. Developed trails will be located on existing dikes and would not require direct loss of wetland habitat for construction.

Cats and dogs, both feral and domestic, could be the most serious problem. Free-roaming pets can cause significant problems through direct predation and harassment. For the most part, water birds utilizing the ponds and other wetlands should habituate to human presence and activity along the trail system. Dogs and cats, however, roam across all undeveloped lands and could severely disrupt wildlife populations to a point that water birds avoid certain seemingly optimum habitats. Domestic and feral animals are already present in the 511 Area and increased development would compound existing problems.

There would also be potential for increased contamination of the wetlands from urban runoff (oil, grease, pesticides, fertilizers, etc.). These potential impacts could range from significant, probably localized problems, to insignificant, depending on how specific storm drain systems are designed.

Overall, endangered species such as the salt marsh harvest mouse and species or wildlife groups of concern such as water birds would receive significant benefit through habitat protection and enhancement as a result of the proposed Specific Plan. The adverse impacts described would occur with any continued development in the area but are greatly reduced through measures adopted in the Plan.

Mitigation Measures

Mitigation Included With Project. Measures that are part of the Specific Plan are described above in the Impact Assessment section.

Mitigation to be Considered. The following measures are recommended to further minimize the effects of development in the 511 Area on vegetation and wildlife.

1. Specific marsh enhancement/development plans should be developed for each wetland enhancement area. Donor areas (wetland areas to be developed) and receiver areas (uplands converted to wetlands or preserved as islands) parcels are shown in Figure II-3. Marsh creation/enhancement should preferably be initiated prior to the destruction of existing donor areas.
2. No livestock grazing should be allowed in wetland and endangered species habitats.
3. Conditions, covenants, and restrictions (CC&Rs) for a development's home owners' association(s) should include enforceable provisions with mandatory fines to enforce strict leash laws.
4. Dogs and cats should not be allowed on trails or should be restricted to 6-foot leashes.
5. Homeowners should be made aware through CC&Rs and purchase agreements of the presence, values, and protective measures associated with the area's wetlands.
6. The 100-foot developmental buffer zones where trails or bike paths are planned in the Turk Island and Ponderosa Homes (Munster and Bacon-Bettencourt) parcels should contain a 70-foot wide zone of natural vegetation and a 30-foot wide zone for paths and landscaping.

7. The 100-foot buffer zone on the west edge of the Beretta parcel development area should be maintained in all natural vegetation.
8. A 50-foot wide natural vegetation zone should be maintained in the 100-foot buffer zone bordering riparian habitat along the southern edge of the Patterson parcel.
9. Wetland habitats should be temporarily fenced or otherwise clearly delineated during construction on the ground to avoid inadvertent grading or filling.
10. The proposed trail leading west from Dolores Drive and at the south end of the Beretta development area should be located along the dike on the south side of the canal. This will discourage off-trail trampling and use of high value salt marsh harvest mouse habitat.
11. The existing weedy vegetation on the sides of the dikes proposed for trails in wetland habitats should be allowed to remain. This dense cover of plant species such as fennel, mustard, and wild radish would discourage people from leaving established trails. The weedy vegetation also provides important cover for wildlife, particularly when adjacent wetlands are inundated during winter storms.
12. Landscaping of buffer zones and other public facilities should encourage the use of natural vegetation which will provide additional food and cover value for wildlife. Table 5 lists suggested plants for landscaping in the 511 Area. All are usually commercially available.
13. Storm drains should be designed to divert all runoff into a sewer system. Minimally, the first hour of runoff when most of the contaminants are washed out should be diverted to the sewer system. Runoff after this could be diverted into seasonal wetland depressions since additional freshwater inflow (surface runoff) may be necessary to maintain the current extent of wetland vegetation (see Vegetation Impact discussion). No runoff should be directed into endangered species habitat, to avoid potential contamination impacts and reduce flooding in low basins. Winter flooding is a major mortality factor for salt marsh harvest mice and can severely decimate populations in diked salt marsh basins which do not readily drain.

TABLE 5
Recommended Native Plants for Landscaping in the 511 Area

Trees and Shrubs

coyote bush	<u>Baccharis pilularis</u> ssp. <u>consanguinea</u>
dwarf coyote bush	<u>B. pilularis</u>
mule fat, seep willow	<u>B. viminea</u> , <u>B. glutinosa</u> , <u>B. douglasii</u>
buckwheats	<u>Eriogonum arborescens</u> , <u>E. giganteum</u>
saltbushes	<u>Atriplex lentiformis</u> var. <u>breweri</u> or <u>A. patula hastata</u>
ceanothus	<u>Ceanothus gloriosus</u>
flannel bush	<u>Fremontia californica</u>
toyon	<u>Heteromeles arbutifolia</u>
Bishop pine	<u>Pinus muricata</u>
coast live oak	<u>Quercus agrifolia</u>
California buckeye	<u>Aesculus californica</u>
hollyleaf cherry	<u>Prunus illicifolia</u>
sugar bush	<u>Rhus ovata</u>
purple sage	<u>Salvia leucophylla</u>
blackberries	<u>Rubus</u> ssp.
willow	<u>Salix</u> spp.
sycamore	<u>Plantanus racemosa</u>
cottonwood	<u>Populus fremontii</u>

Herbs and Groundcovers

trefoil	<u>Lotus corniculatus</u>
seaside daisy	<u>Eriophyllum staechadifolium</u>
poppy	<u>Eschscholzia californica</u>
gold wire	<u>Hypericum concinnum</u>
blue-eyed grass	<u>Sisyrinchium bellum</u>
goldfields	<u>Lasthenia californica</u>
lupines	<u>Lupinus</u> ssp.

References

Vegetation

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service. Biological services program; FWS/OBS-79/31.

Bay Planning Coalition. 1986. Wetland status for a list of plants from San Francisco Bay (draft). Bay Planning Commission/U.S. Army Corps of Engineers: Prevalence of Vegetation Workshop, April 23, 1986.

Holmes, L.C. and J.W. Nelson. 1914. Reconnaissance soil survey of the San Francisco Bay Region, California. USDA Bureau of Soils.

Jones and Stokes Associates, Inc. 1979. Protection and restoration of San Francisco Bay fish and wildlife habitat; Volume II, habitat description, use, and delineation. Report prepared for U.S. Fish and Wildlife Service and California Department of Fish and Game.

National Wetlands Inventory (NWI). 1985. Newark 7.5 minute quadrangle. U.S. Fish and Wildlife Service, Portland, Oregon.

Nichols, D.R. and N.A. Wright. 1971. Preliminary map of historic marshlands, San Francisco Bay, California. U.S. Geological Survey, S.F. Bay Region Environmental and Planning Study, Contribution #9.

Munz, P.A. and D.D. Keck. 1968. A California flora and supplement. University of California Press, Berkeley, California.

Sanders, D.R. Sr., W.B. Parker, S.W. Forsythe, and R.T. Huffman. 1985. Wetland delineation manual, Parts I-IV. Army Corps of Engineers, Wetlands Research Program, Technical Report 4-84-.

San Francisco Bay Conservation and Development Commission (BCDC). 1982. Diked historic baylands of San Francisco Bay. BCDC, San Francisco, California.

Smith, J.P. and R. York. 1984. Inventory of rare and endangered vascular plants of California. California Native Plant Society, Special Publication No. 1 (3rd Ed.).

Soil Conservation Service. 1975. Soil Taxonomy. U.S. Department of Agriculture, Agriculture Handbook No. 436.

U.S. Geological Survey (USGS). 1980. Newark 7.5 minute quadrangle.

Welch, L.E. 1981. Soil survey of Alameda County, California, Western Part. Soil Conservation Service, National Cooperative Soil Survey. U.S. Government Printing Office: 1980-273-058/6.

Wildlife

Bent, A.C. 1927. Life histories of North American shorebirds, part two. Dover Publications, New York.

Botti, F., D. Warenycia, and D. Becker. 1986. Utilization by salt marsh harvest mice, *Reithrodontomys raviventris halicoetes*, of a non-pickleweed marsh. California Fish and Game. Vol. 72(1):62. California Department of Fish and Game, Sacramento.

California Department of Fish and Game. 1980. At the crossroads, a report on California's endangered and rare fish and wildlife. Sacramento.

Fisler, G.F. 1965. Adaptations and speciation in harvest mice of the marshes of San Francisco Bay. University of California, Publ. in Zoology 77:1-108.

Grinnell, J. and M.W. Wythe. 1927. Directory to the bird-life of the San Francisco Bay Region. Cooper Ornithological Union. Pacific Coast Avifauna No. 13. Berkeley.

Harvey, T.E. 1980. California clapper rail survey, 1978-1979. Project E-W-3. California Department of Fish and Game, Sacramento.

Harvey, H.T., H.L. Mason, R. Gill, and T.W. Wooster. 1977. The marshes of San Francisco Bay: their attributes and values. San Francisco Bay Conservation and Development Commission.

Hobson, K., P. Perrine, E.B. Roberts, M.L. Foster, and P. Woodin. 1985. A breeding season survey of salt marsh yellowthroats (*Geothlypis trichas sinuatus*). San Francisco Bay Bird Observatory. U.S. Fish and Wildlife Service Contract N.84-57. Sacramento.

Jones and Stokes Associates, Harvey and Stanley Associates, and John Blayney Associates. 1979. Protection and restoration of San Francisco Bay fish and wildlife habitat. California Department of Fish and Game and U.S. Fish and Wildlife Service, Sacramento.

Kobetich, G.C. 1986. Records of endangered species on lands owned by Alameda County (Case No. 1-1-86-TA-281). Letter to H.A. Flertzheim, Jr., Director of Public Works and P.E. Lanferman, Engineer-Manager Alameda County Flood Control District. U.S.D.I. Fish and Wildlife Service, Sacramento Endangered Species Office.

McCaskie, G., P. De Benedictis, R. Erickson, J. Morlan. 1979. Birds of northern California: an annotated field list. Golden Gate Audubon Society, Berkeley.

McKevitt, J.J. 1986. Letter to Mr. Tom Kitayama, Mayor, City of Union City regarding scoping information for the 511 Area, U.S.D.I. Fish and Wildlife Service, Division of Ecological Services, Sacramento.

_____. 1985. Letter to Mr. Jon Holan, Associate Planner, City of Union City concerning 511 Area wetlands. Fish and Wildlife Service, Division of Ecological Services, Sacramento.

Page, G.W. and L.E. Stenzel, editors. 1979. The breeding status of the snowy plover in California. Calif. Dept. of Fish and Game, Nongame Wildlife Investigations, Sacramento.

Remsen, J.V. 1978. The species of special concern list: an annotated list of declining or vulnerable species in California. California Department of Fish and Game, Nongame Wildlife Investigations, Report No. 78-1.

Rigney, M. and T. Rigney. 1981. A breeding bird survey of the South San Francisco Bay salt pond levee system. South Bay Institute for Avian Studies.

Shellhammer, H.S. 1984. Identification of salt marsh harvest mice, *Reithrodontomys raviventris*, in the field and with cranial characteristics. California Fish and Game Vol. 70(2): 113-120. California Department of Fish and Game, Sacramento.

Todd, R.L. 1977. Black rail, little black rail, black cake, Farallon rail (*Laterallus jamaicensis*). In management of migratory shore and upland game birds in North America. Edited by G.C. Sanderson. University of Nebraska Press, Lincoln and London.

WESCO. 1986a. Status survey for the San Pablo vole (*Microtus californicus sanpabloensis*). Final Report. U.S.D.I. Fish and Wildlife Service, Sacramento Endangered Species Office.

_____. 1986b. A review of the population status of the salt marsh wandering shrew (*Sorex vagrans halicoetes*). Final Report. U.S.D.I. Fish and Wildlife Service, Sacramento Endangered Species Office.

_____. 1981. Biological resources of the Pittsburg 8 and 9 study area. Unpublished report prepared for Pacific Gas and Electric Company, Department of Engineering and Research, San Ramon, Calif.

Wilbur, S.R. 1974. The literature of the California black rail. U.S.D.I. Fish and Wildlife Service. Special Scientific Report - Wildlife No. 179. Washington, D.C.

PROJECT STAFF

Paul Sedway, Principal-in-Charge
Tom Cooke, Consulting Principal
Rod Jeung, Project Manager
Dena Belzer, Assistant Project Manager

Jack Schnitzius, Senior Associate
Janet Parrish, Planner
Andrej Skarica, Urban Designer
Eve Kliszewski, Research Assistant
Frank Kasimov, Research Assistant
Rose Rodrigues, Lead Word Processing Operator
Faith Dunham, Word Processor
Grace Wright, Word Processor
Juliana Pennington, Supervising Graphic Designer
Candace Gianni, Graphics
Suzette Metz, Graphics



